RAD
data communications

Installation and Operation Manual

ASMi-52

2/4-Wire SHDSL Modem

ASMi-52

2/4-Wire SHDSL Modem

Installation and Operation Manual

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General Safety Instructions

The following instructions serve as a general guide for the safe installation and operation of telecommunications products. Additional instructions, if applicable, are included inside the manual.

Safety Symbols

Warning

This symbol may appear on the equipment or in the text. It indicates potential safety hazards regarding product operation or maintenance to operator or service personnel.

Danger of electric shock! Avoid any contact with the marked surface while the product is energized or connected to outdoor telecommunication lines.

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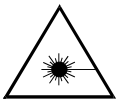
Protective earth: the marked lug or terminal should be connected to the building protective earth bus.



Warning

Some products may be equipped with a laser diode. In such cases, a label with the laser class and other warnings as applicable will be attached near the optical transmitter. The laser warning symbol may be also attached. Please observe the following precautions:

- **Before turning on the equipment, make sure that the fiber optic cable is intact and is connected to the transmitter.**
- **Do not attempt to adjust the laser drive current.**
- **Do not use broken or unterminated fiber-optic cables/connectors or look straight at the laser beam.**
- **The use of optical devices with the equipment will increase eye hazard.**
- **Use of controls, adjustments or performing procedures other than those specified herein, may result in hazardous radiation exposure.**

ATTENTION: The laser beam may be invisible!

Always observe standard safety precautions during installation, operation and maintenance of this product. Only qualified and authorized service personnel should carry out adjustment, maintenance or repairs to this product. No installation, adjustment, maintenance or repairs should be performed by either the operator or the user.

Handling Energized Products

General Safety Practices

Do not touch or tamper with the power supply when the power cord is connected. Line voltages may be present inside certain products even when the power switch (if installed) is in the OFF position or a fuse is blown. For DC-powered products, although the voltages levels are usually not hazardous, energy hazards may still exist.

Before working on equipment connected to power lines or telecommunication lines, remove jewelry or any other metallic object that may come into contact with energized parts.

Unless otherwise specified, all products are intended to be grounded during normal use. Grounding is provided by connecting the mains plug to a wall socket with a protective earth terminal. If an earth lug is provided on the product, it should be connected to the protective earth at all times, by a wire with a diameter of 18 AWG or wider. Rack-mounted equipment should be mounted only in earthed racks and cabinets.

Always make the ground connection first and disconnect it last. Do not connect telecommunication cables to ungrounded equipment. Make sure that all other cables are disconnected before disconnecting the ground.

Connection of AC Mains

Make sure that the electrical installation complies with local codes.

Always connect the AC plug to a wall socket with a protective ground.

The maximum permissible current capability of the branch distribution circuit that supplies power to the product is 16A. The circuit breaker in the building installation should have high breaking capacity and must operate at short-circuit current exceeding 35A.

Always connect the power cord first to the equipment and then to the wall socket. If a power switch is provided in the equipment, set it to the OFF position. If the power cord cannot be readily disconnected in case of emergency, make sure that a readily accessible circuit breaker or emergency switch is installed in the building installation.

Connection of DC Mains

Unless otherwise specified in the manual, the DC input to the equipment is floating in reference to the ground. Any single pole can be externally grounded.

Due to the high current capability of DC mains systems, care should be taken when connecting the DC supply to avoid short-circuits and fire hazards.

DC units should be installed in a restricted access area, i.e. an area where access is authorized only to qualified service and maintenance personnel.

Make sure that the DC supply is electrically isolated from any AC source and that the installation complies with the local codes.

The maximum permissible current capability of the branch distribution circuit that supplies power to the product is 16A. The circuit breaker in the building installation should have high breaking capacity and must operate at short-circuit current exceeding 35A.

Before connecting the DC supply wires, ensure that power is removed form the DC circuit. Locate the circuit breaker of the panel board that services the equipment and switch it to the OFF position. When connecting the DC supply wires, first connect the ground wire to the corresponding terminal, then the positive pole and last the negative pole. Switch the circuit breaker back to the ON position.

A readily accessible disconnect device that is suitably rated and approved should be incorporated in the building installation.

Connection of Data and Telecommunications Cables

Data and telecommunication interfaces are classified according to their safety status.

The following table lists the status of several standard interfaces. If the status of a given port differs from the standard one, a notice will be given in the manual.

Ports	Safety Status	
V.11, V.28, V.35, V.36, RS-530, X.21, 10 BaseT, 100 BaseT, Unbalanced E1, E2, E3, STM, DS-2, DS-3, S-Interface ISDN, Analog voice E&M	SELV	Safety Extra Low Voltage: Ports which do not present a safety hazard. Usually up to 30 VAC or 60 VDC.
xDSL (without feeding voltage), Balanced E1, T1, Sub E1/T1	TNV-1	Telecommunication Network Voltage-1: Ports whose normal operating voltage is within the limits of SELV, on which overvoltages from telecommunications networks are possible.
FXS (Foreign Exchange Subscriber)	TNV-2	Telecommunication Network Voltage-2: Ports whose normal operating voltage exceeds the limits of SELV (usually up to 120 VDC or telephone ringing voltages), on which overvoltages from telecommunication networks are not possible. These ports are not permitted to be directly connected to external telephone and data lines.
FXO (Foreign Exchange Office), xDSL (with feeding voltage), U-Interface ISDN	TNV-3	Telecommunication Network Voltage-3: Ports whose normal operating voltage exceeds the limits of SELV (usually up to 120 VDC or telephone ringing voltages), on which overvoltages from telecommunication networks are possible.

Always connect a given port to a port of the same safety status. If in doubt, seek the assistance of a qualified safety engineer.

Always make sure that the equipment is grounded before connecting telecommunication cables. Do not disconnect the ground connection before disconnecting all telecommunications cables.

Some SELV and non-SELV circuits use the same connectors. Use caution when connecting cables. Extra caution should be exercised during thunderstorms.

When using shielded or coaxial cables, verify that there is a good ground connection at both ends. The earthing and bonding of the ground connections should comply with the local codes.

The telecommunication wiring in the building may be damaged or present a fire hazard in case of contact between exposed external wires and the AC power lines. In order to reduce the risk, there are restrictions on the diameter of wires in the telecom cables, between the equipment and the mating connectors.

Caution

To reduce the risk of fire, use only No. 26 AWG or larger telecommunication line cords.

Attention

Pour réduire les risques s'incendie, utiliser seulement des conducteurs de télécommunications 26 AWG ou de section supérieure.

Some ports are suitable for connection to intra-building or non-exposed wiring or cabling only. In such cases, a notice will be given in the installation instructions.

Do not attempt to tamper with any carrier-provided equipment or connection hardware.

Electromagnetic Compatibility (EMC)

The equipment is designed and approved to comply with the electromagnetic regulations of major regulatory bodies. The following instructions may enhance the performance of the equipment and will provide better protection against excessive emission and better immunity against disturbances.

A good earth connection is essential. When installing the equipment in a rack, make sure to remove all traces of paint from the mounting points. Use suitable lock-washers and torque. If an external grounding lug is provided, connect it to the earth bus using braided wire as short as possible.

The equipment is designed to comply with EMC requirements when connecting it with unshielded twisted pair (UTP) cables. However, the use of shielded wires is always recommended, especially for high-rate data. In some cases, when unshielded wires are used, ferrite cores should be installed on certain cables. In such cases, special instructions are provided in the manual.

Disconnect all wires which are not in permanent use, such as cables used for one-time configuration.

The compliance of the equipment with the regulations for conducted emission on the data lines is dependent on the cable quality. The emission is tested for UTP with 80 dB longitudinal conversion loss (LCL).

Unless otherwise specified or described in the manual, TNV-1 and TNV-3 ports provide secondary protection against surges on the data lines. Primary protectors should be provided in the building installation.

The equipment is designed to provide adequate protection against electro-static discharge (ESD). However, it is good working practice to use caution when connecting cables terminated with plastic connectors (without a grounded metal hood, such as flat cables) to sensitive data lines. Before connecting such cables, discharge yourself by touching earth ground or wear an ESD preventive wrist strap.

FCC-15 User Information

This equipment has been tested and found to comply with the limits of the Class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the Installation and Operation manual, may cause harmful interference to the radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Canadian Emission Requirements

This Class A digital apparatus meets all the requirements of the Canadian Interference-Causing Equipment Regulation.

Cet appareil numérique de la classe A respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

Warning per EN 55022 (CISPR-22)

Warning	This is a class A product. In a domestic environment, this product may cause radio interference, in which case the user will be required to take adequate measures.
Avertissement	Cet appareil est un appareil de Classe A. Dans un environnement résidentiel, cet appareil peut provoquer des brouillages radioélectriques. Dans ces cas, il peut être demandé à l'utilisateur de prendre les mesures appropriées.
Achtung	Dieses ist ein Gerät der Funkstörgrenzwertklasse A. In Wohnbereichen können bei Betrieb dieses Gerätes Rundfunkströrungen auftreten, in welchen Fällen der Benutzer für entsprechende Gegenmaßnahmen verantwortlich ist.

Quick Start Guide

Installation of ASMi-52 should be carried out only by an experienced technician. If you are familiar with ASMi-52, use this guide to prepare the units for operation.

1. Installing ASMi-52

Connecting the Interfaces

1. Connect the line to the RJ-45 rear panel connector dedicated SHDSL.
2. Connect the DTE to the appropriate rear panel connector.
3. Connect the control terminal to the rear panel CONTROL connector.

Connecting the Power

- Connect the AC or DC power to the ASMi-52 modem.

  The unit has no power switch. Operation starts when the power is applied to the rear panel power connector.

2. Configuring ASMi-52

Configure ASMi-52 to the desired operation mode via an ASCII terminal connected to the rear panel CONTROL port directly or via a modem link.

Connecting the Terminal

➤ **To connect the terminal:**

1. Connect the terminal cable to the CONTROL connector of ASMi-52.
2. Turn the control terminal on.
3. Configure the terminal to the default communication parameters: 9.6 kbps, one start bit, eight data bits, no parity, one stop bit.
4. Select the full-duplex mode.
5. Turn the terminal echo off.
6. Disable any type of flow control.

   You are now ready to start a control session.

Configuring the Master Clock

➤ **To configure the master clock:**

- From the System Configuration menu (**Main menu > Configuration > System Configuration > Master Clock**), configure the central ASMi-52 clock to external or internal and remote ASMi-52 clock to the receive clock.

Configuring the SHDSL Interface

➤ **To configure the SHDSL interface:**

- From the SHDSL Configuration menu (**Main menu > Configuration > Port Configuration > SHDSL Configuration**), configure the following SHDSL parameters:
  - SHDSL compatibility
  - Power backoff
  - Snext margin, if line probing is set to adaptive
  - Current margin, if line probing is set to adaptive
  - Power spectral density (for ASMi-52 with 2-wire line interface and line probing set to fixed).
  - Line probing
  - Line type (for 4-wire ASMi-52 units only)
  - Loop attenuation threshold
  - SNR margin threshold.

Configuring the DTE Interface

ASMi-52 includes a serial, E1, T1 or 10/100BaseT DTE interface.

Configuring the Serial Interface

➤ **To configure the serial interface:**

- From the DTE Port Configuration (**Main menu > Configuration > Port Configuration > DTE Configuration**), select the required data rate.

Configuring the E1 Interface

When configuring an E1 interface, you have to select the modem's framing mode and assign each E1 timeslot to carry data or idle code.

If in your application, an ASMi-52 unit with an E1 interface operates opposite another ASMi-52 unit, the E1 settings of the remote device are automatically matched to those of the local modem (the Units Identical Setting value is set to YES by default). The Units Identical Setting value of the local modem overrides the management commands of the remote supervisory terminal.

➤ **To configure E1 parameters:**

- From the E1 Port Configuration menu (**Main menu > Configuration > Port Configuration > E1 Port Configuration**), configure the following E1 parameters:
  - Framing mode
  - Timeslot assignment.

Note

- *You can configure timeslot 0 to be looped or transparent:*
  - *Looped – timeslot 0 is sent back to the E1 interface, when operating opposite remote units with a serial data interface.*
  - *Transparent – timeslot 0 is transmitted to the remote modem.*
- *If you operate ASMi-52 with the G732S framing, timeslot 0 is always transparent and timeslot 16 is always connected.*
- *When operating a 2-wire ASMi-52 with E1 interface opposite ASMi-52 with V.35 interface (not in LS mode), assign at least three timeslots, excluding timeslot 0, to carry data.*
- *When operating a 4-wire ASMi-52 with E1 interface opposite ASMi-52 with V.35 interface (not in LS mode), assign at least six timeslots, excluding timeslot 0, to carry data.*

Configuring the T1 Interface

➤ **To configure T1 parameters:**

- From the T1 Port Configuration menu (**Main menu > Configuration > Port Configuration > T1 Port Configuration**), configure the following T1 parameters:
  - Framing mode
  - Line coding
  - Receive gain
  - Interface type
  - Transmit signal mask
  - Timeslot assignment.

Configuring the 10/100BaseT Interface

➤ **To configure 10/100BaseT parameters:**

- From the LAN Configuration menu (**Main menu > Configuration > System Configuration > LAN Configuration**), configure the following LAN parameters:
  - Operation mode
  - Bridge static table
  - Aging timeout
  - LAN rate.

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Appendix B. IR-IP Interface Module

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Chapter 1
Introduction

1.1 Overview

ASMi-52 is an SHDSL modem, which operates in full duplex over 2/4-wire lines and offers a cost-effective solution for delivering digital data to customer premises over the existing copper cables. ASMi-52 handles multiple data rates in the range of 64–4608 kbps. The modem supports X.21, V.35, RS-530, E1 and T1 interfaces. In addition, ASMi-52 may contain an Ethernet/Fast Ethernet bridge with VLAN support (via management LAN port) or an IP router (IR-IP).

ASMi-52 uses TC-PAM coding and complies with the ITU-T G.991.2 requirements.

Versions

Line Interface

- ASMi-52 for operation over 2-wire line
- ASMi-52 for operation over 4-wire line.

Unit Enclosure

ASMi-52 is available in a plastic or metal enclosure.

Applications

Figure 1-1 illustrates a typical ASMi-52 application, in which standalone modems operate opposite each other. *Figure 1-2* shows a typical application of the remote ASMi-52 units with a centrally located ASMi-52CD dual modem cards.

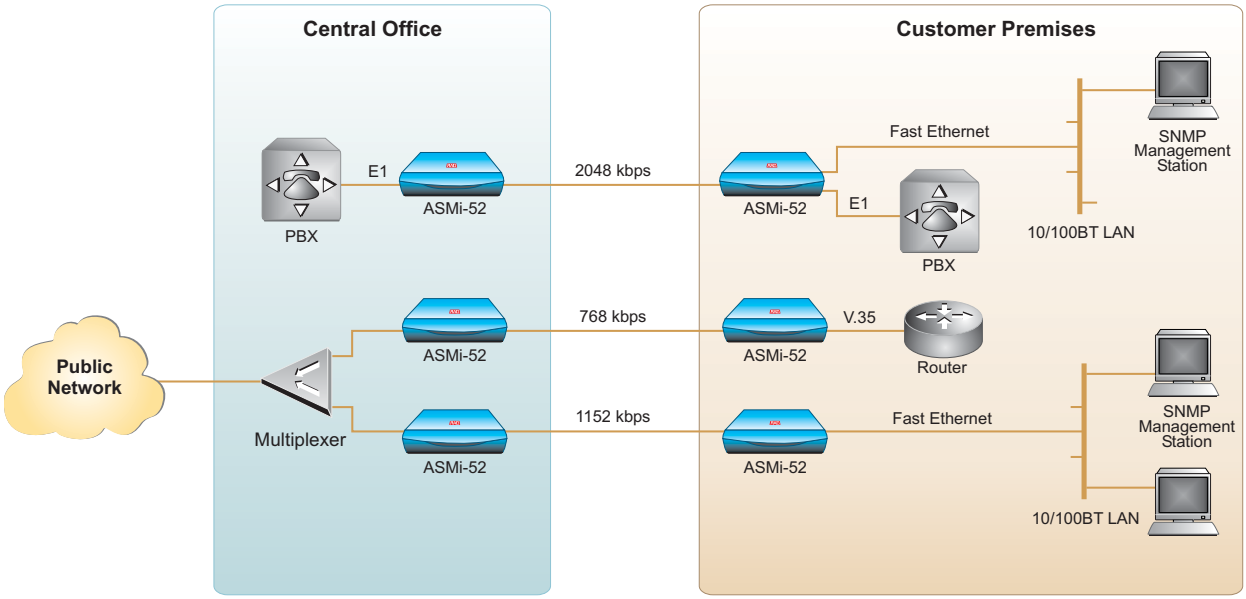

Figure 1-1. Standalone Modem Application

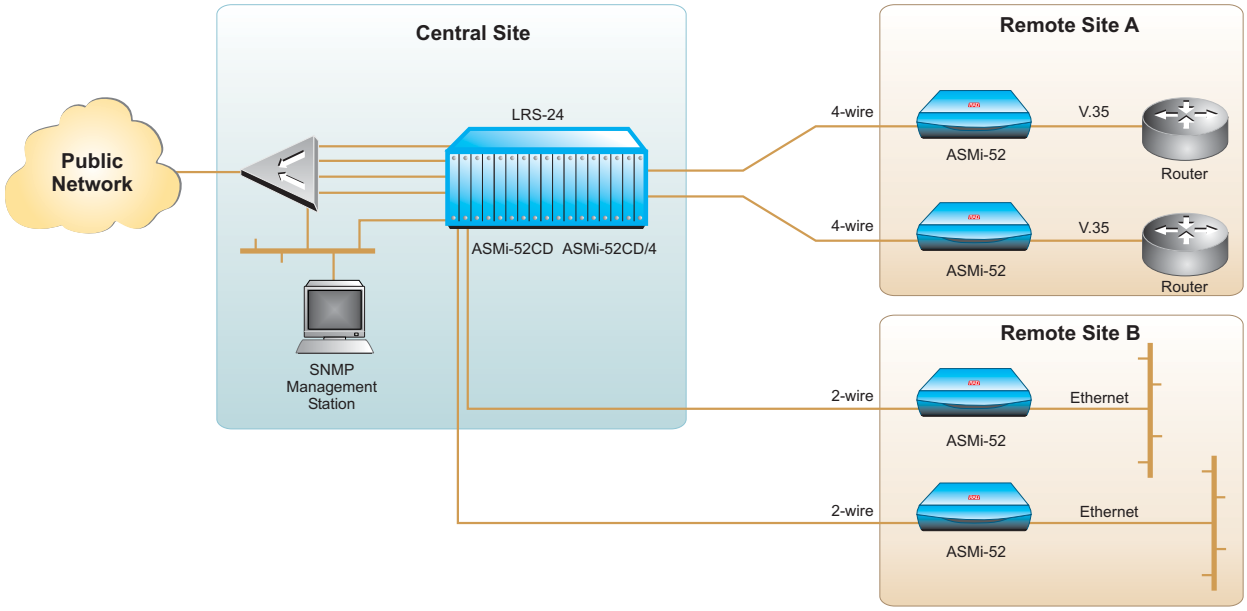

Figure 1-2. ASMi-52 Modems Operating opposite ASMi-52CD Cards

Features

Functionality

ASMi-52 can be configured to operate in a CO (central office) or CPE (customer premises equipment) mode.

Line Interface

ASMi-52 extends the range of data transmission over 2/4-wire lines up to 7.0 km (4.3 miles), by employing SHDSL TC-PAM technology. ASMi-52 operation complies with the requirements of the ITU-T G.991.2 standard. 4-wire ASMi-52 units can be configured to operate over 4-wire or 2-wire lines.

Table 1-1 lists typical ASMi-52 ranges over 2/4-wire 26 AWG line.

Table 1-1. Typical Ranges (26 AWG)

Data Rate	2-wire		4-wire	
[kbps]	[km]	[miles]	[km]	[miles]
64	7.5	4.6	–	–
128	7.0	4.3	7.1	4.4
256	6.7	4.1	6.8	4.2
384	6.5	4.0	6.7	4.1
512	6.3	3.9	6.6	4.1
1024	5.3	3.3	6.0	3.7
1536	5.0	3.1	5.6	3.5
2048	4.5	2.8	4.7	2.9
2304	4.2	2.6	4.5	2.8
4096	–	–	3.7	2.3
4608	–	–	3.0	1.8

DTE Interface

ASMi-52 supports the following DTE interfaces:

- X.21
- V.35
- RS-530
- E1, as per G.704
- T1
- Ethernet/Fast Ethernet bridge with VLAN support (combined with management LAN port)
- IR-IP (IP router).

In the ASMi-52 units with the serial, E1 or T1 DTE interface, the 10/100BaseT port serves for the management only. When ASMi-52 is ordered only with the 10/100BaseT port, it can be used for transfer of the user and management data.

Note *E1 unbalanced interface is provided via an adapter cable (CBL-RJ45/2BNC/E1). The impedance conversion (120Ω to 75Ω) is performed by ASMi-52 automatically, once the adapter cable connection is detected.*

ASMi-52 supports multiple data rates in the range between 64 kbps and 4608 kbps. Data rate depends on the following factors:

- Unit rate mode (regular or low speed)
- Line interface type (2-wire or 4-wire)
- DTE interface type of the local and remote units (serial or E1)
- Clock mode (internal or external).

Table 1-2 and *Table 1-3* detail the ASMi-52 data rates with all possible combinations of rate mode types, line/DTE interface types, and clock modes.

Table 1-2. ASMi-52 Data Rates

DTE Interface & Clock Mode		Line Interface	
Local ASMi-52	**Remote ASMi-52**	**2-wire**	**4-wire**
Serial DTE interface, internal clock	Serial DTE interface	N × 64 kbps (N = 1, 2, … 32, 36)	N × 128 kbps (N = 1, 2, …32, 36)
Serial DTE interface, external clock	Serial DTE interface	N × 64 kbps (N = 1, 2, …, 36)	N × 128 kbps (N = 1, 2, …, 36)
Serial DTE interface	E1 DTE interface	N × 64 kbps (N = 3, 4, …, 32)	N × 128 kbps (N = 3, 4, …, 16)
E1 DTE interface	Serial DTE interface	N × 64 kbps (N = 3, 4, …, 32)	N × 128 kbps (N = 3, 4, …, 16)
E1 DTE interface	E1 DTE interface	N × 64 kbps (N = 1, 2, …, 32)	N × 64 kbps (N = 1, 2, …, 32)
Serial DTE interface	T1 DTE interface	N × 64 kbps (N = 3, 4, …, 24)	N × 128 kbps (N = 3, 4, …, 12)
T1 DTE interface	Serial DTE interface	N × 64 kbps (N = 3, 4, …, 24)	N × 128 kbps (N = 3, 4, …, 12)
T1 DTE interface	T1 DTE interface	N × 64 kbps (N = 1, 2, …, 24)	N × 64 kbps (N = 1, 2, …, 24)

Table 1-3. ASMi-52 Data Rates (Low Speed Mode)

Unit and DTE Interface Type		Line Interface	
Local Unit	**Remote Unit**	**2-wire**	**4-wire**
ASMi-52 in low speed mode	ASMi-52 in low speed mode	N × 64 kbps (N = 1, 2, …, 32)	N × 64 kbps (N = 1, 2, …, 32)
ASMi-52 in low speed mode	ASMi-52 with serial DTE interface	N × 64 kbps (N = 3, 4, …, 32)	N × 128 kbps (N = 3, 4, …, 16)
ASMi-52 in low speed mode	ASMi-52 with E1 DTE interface	N × 64 kbps (N = 1, 2, …, 32)	N × 64 kbps (N = 1, 2, …, 32)
ASMi-52 in low speed mode	ASMi-52 with T1 DTE interface	N × 64 kbps (N = 1, 2, …, 24)	N × 64 kbps (N = 1, 2, …, 24)

Timing

ASMi-52 supports three clock modes:

- Internal, derived from its internal oscillator (CO mode)
- External, supplied by the attached DTE
- Receive, recovered from the received line signal (CPE mode).

Management

ASMi-52 supports the following management options:

- SLIP via V.24 (RS-232) terminal port
- Telnet via dedicated 10/100BaseT port
- SNMP network management (RADview) via dedicated 10/100BaseT port
- PC, running a Web browsing application (ConfiguRAD)
- Inband management via dedicated timeslot (units with E1/T1 interface only).

EOC

ASMi-52 provides an inband management channel (EOC) for end-to-end system management and supervision. This management channel uses SHDSL overhead bits and operates without interfering with data transmission.

ConfiguRAD

ConfiguRAD is user-friendly Web-based terminal management system serving for remote device configuration and maintenance. It is embedded in ASMi-52 and provided at no extra cost. ConfiguRAD can be run from any standard Web browser.

Dial-In

The V.24 terminal port supports dial-up modem connection for remote management of ASMi-52 over telephone lines.

Dial-Out

The V.24 terminal port supports alarm dial-out.

Diagnostics

ASMi-52 supports activation of the following:

- Local loopback
- Remote loopback
- Remote loopback at SHDSL repeater (activated from the local unit).

All tests can be activated from the local unit or from the remote unit.

Real time alarms provide information on the system status, indicating management failure, synchronization loss and other conditions.

Statistic Collection

ASMi-52 supports SHDSL and E1/T1 statistics collection.

Alarm Reporting

ASMi-52 alarms are relayed via dedicated 6-pin terminal block connector.

SHDSL Repeaters

Up to eight SHDSL repeaters can be installed in line to increase the operation range of the modem. ASMi-52 provides basic management of the repeaters.

1.2 Physical Description

Figure 1-3 shows a 3D view of the ASMi-52 unit in the plastic enclosure.

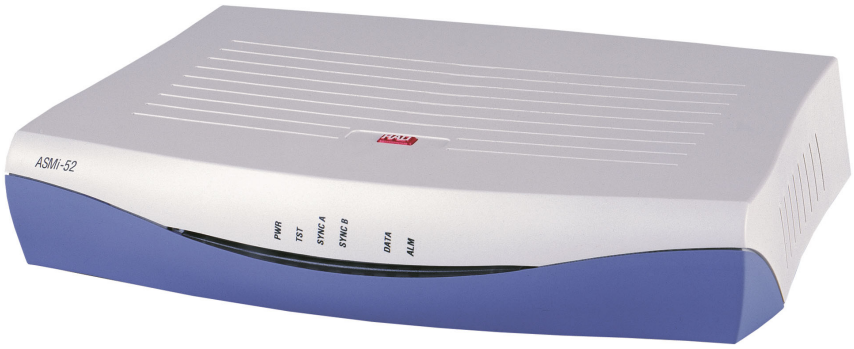

Figure 1-3. ASMi-52, 3D View

The front panel includes several LEDs, which display the status of power, data flow and provide diagnostics. For a detailed description of the front panel, see *Chapter 3*.

The rear panel includes AC/DC power connector, a DTE connector, a line connector, 10/100BT port, V.24 terminal connector and alarm relay port. The ASMi-52 rear panel is described in greater detail in *Chapter 2*.

1.3 Functional Description

This section provides a functional description of ASMi-52 in the form of block diagrams (*Figure 1-4* and *Figure 1-5*).

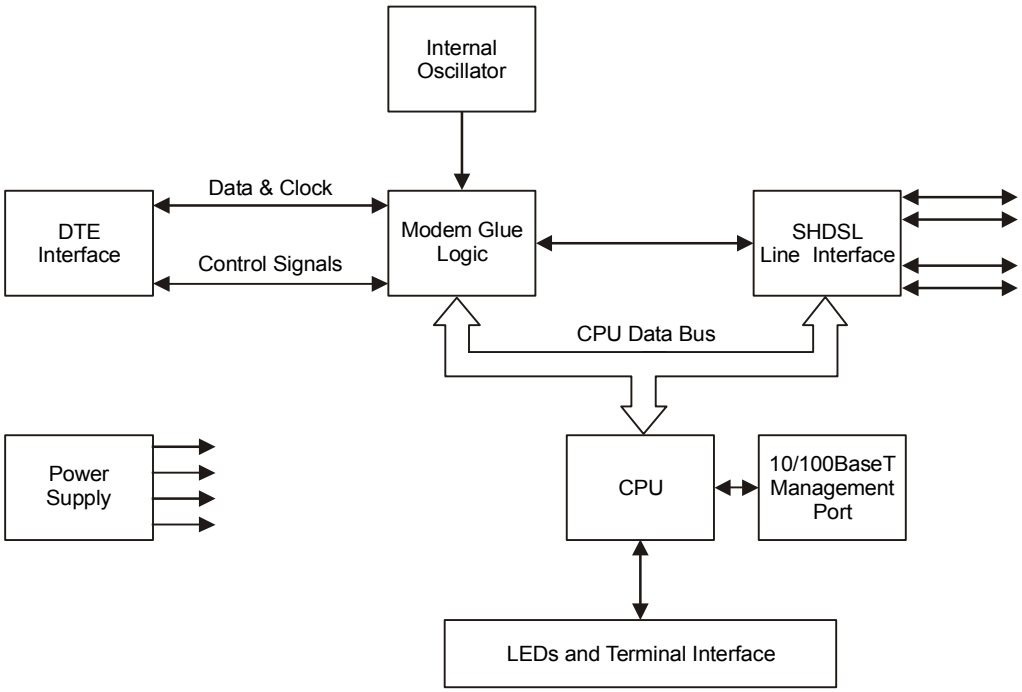

Figure 1-4. ASMi-52/4W with V.35 Interface and 10/100BaseT Management Port

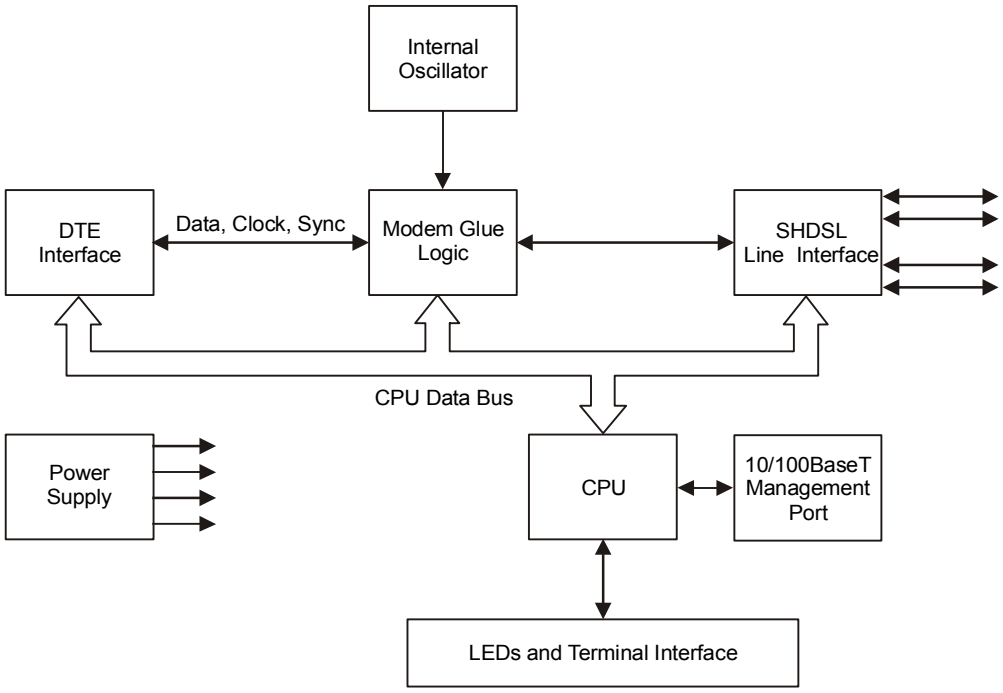

Figure 1-5. ASMi-52/4W with Framed E1 Interface and 10/100BaseT Management Port

The ASMi-52 modem consists of the following major modules:

DTE interface – Prepares the digital data coming from the DTE into a data stream for the modem glue logic. In addition it translates the data from the modem glue logic into digital data to be sent to the DTE.

Internal oscillator – Serves as a source of internal clock for the ASMi-52 unit.

Modem glue logic module – Processes the data from/to the SHDSL interface module.

SHDSL line interface – Translates the received and transmitted data from the line to the DTE interface.

Power supply – Provides 2.5V, 3.3V, 5V and -5V voltage to the ASMi-52 internal elements.

CPU – Controls the ASMi-52 operation.

10/100BaseT management port – Provides LAN connection to the SNMP management station or Telnet host.

LEDs and terminal interface – Provides modem status information via LED indicators on the front panel, and communicates with the supervisory terminal.

1.4 Technical Specifications

Line Interface	*Type*	2/4-wire unconditioned dedicated line
	Line Coding	TC-PAM
	Range	See *Table 1-1*
	Impedance	135Ω
	Connector	RJ-45
	Protection	ITU K.21, UL1950
DTE Interface	*Data Rate*	See *Table 1-2* and *Table 1-3*
	E1 Coding	HDB3
	E1 Line Impedance	• 120Ω, balanced • 75Ω, unbalanced
	T1 Coding	AMI
	T1 Line Impedance	100Ω, balanced
	Connector	• X.21: 15-pin, D-type, female • V.35: 34-pin, female • RS-530: 25-pin, D-type, female • E1: RJ-45, balanced or unbalanced (via adapter cable) • T1: RJ-45 • 10/100BaseT: RJ-45 • IR-IP: RJ-45
Terminal	*Interface*	V.24 (RS-232)

Control Port	*Type*	DTE/DCE
	Format	8 bits, no parity
	Baud Rate	9.6, 19.2, 38.4, 57.6, 115.2 kbps
	Connector	9-pin, D-type female
Ethernet Control Port	*Interface*	10/100BaseT
	Protocol	MAC
	Connector	RJ-45
Timing		Derived from three alternative sources: • Internal oscillator • External, from the attached DTE • Receive, derived from the received signal
Diagnostics	*Loopbacks*	ITU V.54: • Local loopback, activated via management software or by the DTE interface signal (V.35 and RS-530 only) • Remote loopback, activated via management software or by the DTE interface signal (V.35 and RS-530 only) • Remote loopback at SHDSL repeater
	Statistics Collection	• E1 with CRC-4 or T1 with ESF framing: per ITU G.706 • E1 without CRC-4 or T1 with SF framing: bipolar violations (BPV) • SHDSL performance
Alarm Relay	*Operation*	Normally Open and Normally Closed, using different pins
	Connector	Terminal block, 6-pin
Indicators	*PWR (green)*	Power
	TEST (red)	Test
	SYNC A/B (green/red)	Synchronization of DSL line
	DATA (yellow)	Data Transfer (except E1 and T1 options)
	E1/T1 SYNC (red)	Loss of E1/T1 synchronization (E1 and T1 options only)
	AIS (yellow)	"All 1s string" is received at the E1 interface (E1 option only)
	YELLOW (yellow)	"All 1s string" is received at the T1 interface (T1 option only)
	ALM (red)	Alarm

Physical	***Plastic Enclosure***	
	Height	43.7 mm / 1.7 in
	Width	240 mm / 9.4 in
	Depth	170.5 mm / 6.7 in
	Weight	0.5 kg / 1.1 lb
	Metal Enclosure	
	Height	47.3 mm / 1.8 in
	Width	215 mm / 8.4 in
	Depth	147 mm / 5.8 in
	Weight	0.7 kg / 1.5 lb
Power Source	*AC/DC Voltage*	Wide range power supply: 100–240 VAC or -40/60 VDC DC only: 24 VDC
	Power Consumption	2-wire: 6W max
		4-wire: 7W max
Environment	*Temperature*	0–50°C / 32–122°F
	Humidity	Up to 90%, non–condensing

Chapter 2

Installation and Setup

This chapter describes installation and setup procedures for the standalone ASMi-52 modem.

After installing the unit:

- Refer to *Chapter 3* for the operating instructions.
- Refer to *Chapter 4* for the detailed system configuration procedures using an ASCII terminal connected to the ASMi-52 control port.

If a problem is encountered, refer to *Chapter 5* for test and diagnostic instructions.

Warning

Internal settings, adjustment, maintenance, and repairs may be performed only by a skilled technician who is aware of the hazards involved. Always observe standard safety precautions during installation, operation, and maintenance of this product.

2.1 Site Requirements and Prerequisites

AC-powered ASMi-52 units should be installed within 1.5m (5 ft) of an easily-accessible grounded AC outlet capable of furnishing the voltage in accordance with ASMi-52 nominal supply voltage.

DC-powered ASMi-52 units require a -48 VDC power source, which must be adequately isolated from the main supply.

Allow at least 90 cm (36 in) of frontal clearance for operating and maintenance accessibility. Allow at least 10 cm (4 in) clearance at the rear of the unit for signal lines and interface cables.

The ambient operating temperature of ASMi-52 should be 0 to 50°C (32 to 122°F), at a relative humidity of up to 90%, non-condensing.

2.2 Package Contents

The ASMi-52 package includes the following items:

- One ASMi-52 unit
- Technical documentation CD
- Power connection accessories (depending on which power option was ordered):
  - Power cord (VAC) and AC/DC plug (-48 VDC)
  - Terminal block kit (24 VDC)
- CBL-RJ45/2BNC/E1 adapter cable for unbalanced E1 interface (if ordered)
- RM-33 rack mount kit for the plastic case unit (if ordered)
- RM-35 rack mount kit for the metal case unit (if ordered).

2.3 Installation and Setup

The ASMi-52 standalone unit is designed for desktop or bench installation and is delivered as a fully assembled unit. No provisions are made for bolting the unit to a tabletop.

➤ **To install ASMi-52:**

1. Determine the required configuration of ASMi-52, in accordance with your application.
2. Connect the line (see *Connecting the Line* below).
3. Connect the DTE (see *Connecting the DTE* below).
4. Connect power to the unit (see *Connecting the Power* below).

Connecting the Interfaces

Figure 2-1 illustrates the rear panel of ASMi-52 in a plastic enclosure with a 4-wire line interface, E1 DTE interface, user LAN interface, alarm relay port and the control port.

Figure 2-2 illustrates the rear panel of ASMi-52 in a metal enclosure with a 4-wire line interface, the user LAN interface, and the control port.

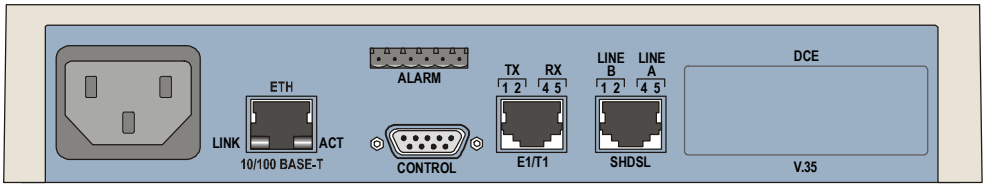

Figure 2-1. ASMi-52 Rear Panel (Plastic Enclosure)

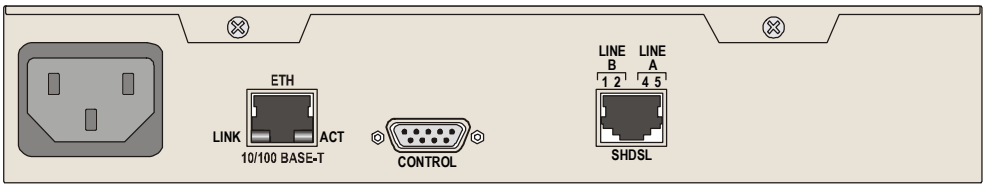

Figure 2-2. ASMi-52 Rear Panel (Metal Enclosure)

Connecting the Line

The ASMi-52 line interface terminates in an 8-pin RJ-45 connector.

➤ **To connect the line connector:**

- Connect the line cable to the RJ-45 connector designated SHDSL.

Connecting the DTE

The ASMi-52 DTE interface provides interface for input/output data, clock reference and control signals between the modem and the DTE. The DTE interface terminates in one of the following connectors:

- X.21 – 15-pin, D-type, female
- V.35 – 34-pin, female
- RS-530 – 25-pin, D-type, female
- Balanced E1 – RJ-45
- Unbalanced E1 – two BNC coax via adapter cable
- Balanced T1 – RJ-45
- IR-IP – RJ-45
- ETH – RJ-45.

For the detailed description of the IR-IP interface module, refer to *Appendix B*.

Warning

The E1/T1 port is intended for intra-building non-exposed plant only.

➤ **To connect the DTE:**

- Connect the DTE to the appropriate rear panel DTE interface connector of the ASMi-52 modem.

Appendix A specifies the DTE connector pinouts.

Connecting the Alarm Relay Connector

➤ **To connect the alarm relay:**

- Connect external alarm device to the rear panel terminal block connector designated ALARM. Refer to *Appendix A* for the connector pinout and alarm functions.

Connecting the Power

ASMi-52 is equipped with a dual input AC/DC power supply. AC or DC power is supplied to ASMi-52 via a standard 3-prong power input connector on the rear panel (see *Figure 2-1*).

Warning

Before connecting this unit to power and connecting or disconnecting any other cable, the protective earth terminals of this unit must be connected to the protective ground conductor of the mains (AC or DC) power cord. If you are using an extension cord (power cable) make sure it is grounded as well. Any interruption of the protective (grounding) conductor (inside or outside the instrument) or disconnecting of the protective earth terminal can make this unit dangerous. Intentional interruption is prohibited.

Connecting AC Power

AC power should be supplied through the 1.5m (5 ft) standard power cable terminated by a standard 3-prong plug. The cable is provided with the unit.

➤ **To connect AC power:**

1. Connect the power cable to the power connector on the ASMi-52 rear panel.
2. Connect the power cable to the mains outlet.

   The unit turns on automatically upon connection to the mains.

Connecting DC Power

DC power is supplied to ASMi-52 via compatible AC/DC plug for attaching DC power supply lines.

➤ **To connect DC power:**

- Refer to the DC power supply connection supplement.

Chapter 3

Operation

This chapter provides the following information for the ASMi-52 modem:

- ASMi-52 front-panel indicators
- Operating procedures (turn-on, front-panel indications, performance monitoring and turn-off).
- ASMi-52 default settings.

Installation procedures given in *Chapter 2* must be completed and checked before attempting to operate ASMi-52.

3.1 Indicators

The front and rear panels of ASMi-52 include a series of LED indicators that show the current operating status of the unit.

Figure 3-1 shows the front panel of the 2-wire ASMi-52 unit in a plastic enclosure with an E1 interface. *Figure 3-2* illustrates front panel of the 4-wire ASMi-52 unit a plastic enclosure with a V.35 interface.

Table 3-1 lists and describes the front panel indicators. *Table 3-2* lists and describes the rear panel indicators

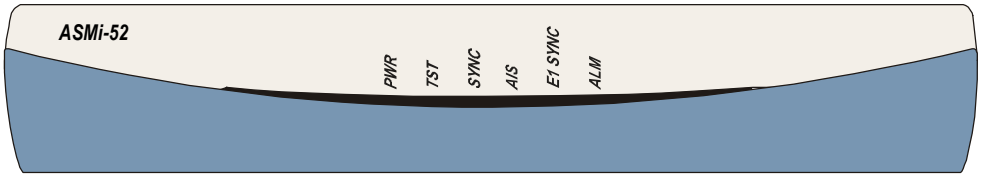

Figure 3-1. ASMi-52 Front Panel, E1 Interface

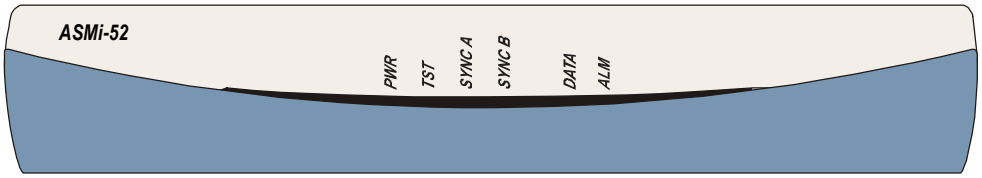

Figure 3-2. ASMi-52 Front Panel, V.35 Interface

Table 3-1. ASMi-52 Front Panel LEDs

Name	Function
PWR (green)	On – Power is ON
TST (red)	On – A loopback test is active in local or remote unit
SYNC A (red/green)	On (red) – Link A is not synchronized On (green) – Link A is synchronized Blinks – The line is connected properly and the synchronization process is taking place
SYNC B (red/green)	On (red) – Link B is not synchronized On (green) – Link B is synchronized Blinking – The line B is connected properly and the synchronization process is taking place
AIS (yellow)	On – "All 1s string" is received at the E1 interface
YELLOW (yellow)	On – "All 1s string" is received at the T1 interface
E1/T1 SYNC (red)	On – Loss of E1 or T1 synchronization
DATA (yellow)	Blinking – Data is being transferred
ALM (red)	On – An alarm enters the buffer of local or remote unit

Table 3-2. ASMi-52 Rear Panel LEDs

Name	Function
ACT (yellow)	Blinks according to Ethernet traffic activity (10/100BaseT connector)
LINK (green)	On – Good link integrity (10/100BaseT connector)

3.2 Operating ASMi-52

Turning On ASMi-52

➤ **To turn on ASMi-52:**

- Connect the power cord to the mains.

  The PWR indicator lights up and remains lit as long as ASMi-52 receives power.

ASMi-52 requires no operator attention once installed, with the exception of occasional monitoring of front panel indicators. Intervention is only required when ASMi-52 must be configured to its operational requirements, or diagnostic tests are performed.

Normal Indications

Upon turning on ASMi-52, the PWR LED in the front panel lights to indicate that ASMi-52 is on. *Table 3-3* shows the correct status of the indicators a few seconds after the units were synchronized.

Table 3-3. ASMi-52 Indicator Status

Indicator	Status
PWR	ON
TST	OFF
ALM	OFF
SYNC	ON (green)

If the above LED indications do not appear following initial power turn-on, refer to *Chapter 5* for the diagnostic test instructions.

Turning Off ASMi-52

➤ **To turn off ASMi-52:**

- Remove the power cord from the power source.

3.3 Default Settings

ASMi-52 is managed by an ASCII terminal or PC running a terminal emulation program via menu-driven embedded software. *Table 3-4* lists the default settings of the ASMi-52 configuration parameters.

Table 3-4. Default Settings

Parameter	Default Value
System	
Clock	Internal
Sys contact	–
Sys location	–
Sys name	–
Host IP address	0.0.0.0
Host IP mask	0.0.0.0
Host default gateway	0.0.0.0
Read community	public
Write community	public
Trap community	public
SNMP allowed	Access allowed

Table 3-4. Default Settings (Cont.)

Parameter	Default Value
Telnet allowed	Access allowed
WEB allowed	Access allowed
Bootp state	OFF
DTS IP address	0.0.0.0
DTS IP mask	0.0.0.0
LAN operation mode	Transparent
Encapsulation CRC	No
Bridging Mode	Access only
Aging Timeout	10
Autonegotiation	Enable
Max AutoNeg Capability	100BASE_T-full duplex mode
Control port rate	9600 bps
Data	8
Parity	None
Interface	DCE
CTS	=RTS
DSR	ON
Port control mode	Terminal
User name	–
Password	1234
Pop alarm	OFF
Security timeout	10 min
Call Out Mode	None
Number of retries	1
Wait for connect	30 sec
Dial mode	Tone
Alternate number mode	Disable
Primary number	–
Alternate number	–

Table 3-4. Default Settings (Cont.)

Parameter	Default Value
SHDSL Interface	
Transmission mode	Annex B
Power backoff	Enable
Snext margin	Disable
Current margin	Disable
Asym PSD	Symmetrical
Line prob	Fixed rate
***Note**: ASMi-52 units with 4-wire line interface support only fixed rate.*	
Configured wire	4w
Loop attenuation threshold	0
SNR margin threshold	0
Serial DTE Interface	
Rate	ASMi-52, 2-wire and V.35 – 192 kbps ASMi-52, 4-wire and V.35 – 384 kbps
LLB from DTE	Disable
RLB from DTE	Disable
E1 Interface	
Framed mode	Unframed
Sync	CCITT
CRC-4	No
Idle Code	ff
Units identical settings	Yes
T1 Interface	
Framed mode	Unframed
Line code	B8ZS
Receive gain	Long
Interface	DSU
Transmit signal mask	0 feet
Fbit configuration	Transparent
Sync mode	Fast (after 1 sec)
Idle code	ff
Units identical set	Yes

Chapter 4

Managing ASMi-52 via a Terminal

The configuration of ASMi-52 is performed via menu-driven embedded software, using a standard ASCII terminal or a PC running a terminal emulation application connected to the rear panel CONTROL port. Alternatively, ASMi-52 can be managed from a Telnet host connected to the 10/100BASE-T port on the rear panel.

4.1 Preparing for a Control Session

This section describes how to prepare ASMi-52 and the supervisory terminal for a control session.

Managing ASMi-52 via Terminal Port

Control Port Interface Characteristics

ASMi-52 includes a V.24 (RS-232) asynchronous DCE port, designated CONTROL and terminated in a 9-pin D-type female connector. The control port continuously monitors the incoming data stream and immediately responds to any input string received through this port.

The terminal can be connected either directly to the ASMi-52 control port, or through a modem or any other type of full-duplex data link. The ASMi-52 control port interface type must be set in accordance with the connection method, as follows:

- DCE – direct connection to terminals. Since terminals usually have DTE interfaces, the connection to the port is made by means of a straight-through cable.
- DTE – connection through a modem or data link. In this case, you need a cross cable (also called a null modem cable) to connect to the CONTROL connector.

The ASMi-52 control port can be configured to communicate at the following rates: 9.6, 19.2, 38.4, 57.6 or 115.2 kbps.

The word format consists of one stop bit, 8 data bits, and no parity.

Preparing the Terminal

Any standard ASCII terminal (a "dumb" terminal or a personal computer running a terminal emulation application) equipped with a V.24 (RS-232) communication interface can be used to configure ASMi-52. *Appendix A* details the pin assignment and control signal directions of the ASMi-52 control connector.

Data Terminal Ready (DTR)

When connected and turned on, the terminal sets the DTR line ON (active) to gain control over ASMi-52 and starts a configuration or monitoring session.

Initiating a Control Session

➤ **To initiate a control session:**

1. Connect the terminal cable to the CONTROL connector of ASMi-52.
2. Turn the control terminal on.
3. Configure the terminal to the default communication parameters: 9.6 kbps, one start bit, eight data bits, no parity, one stop bit, VT100 emulation.
4. Select the full duplex mode.
5. Turn the terminal echo off.
6. Disable any type of flow control.

   You are now ready to start a control session.

Managing ASMi-52 via Ethernet Port

ASMi-52 is equipped with an Ethernet/Fast Ethernet port (10/100BASE-T) which enables communication with ASMi-52 management subsystem using the IP protocol (see *Figure 4-2*). The Ethernet management port is configured for LAN cross-over connection.

➤ **To prepare ASMi-52 for network management:**

1. Connect a LAN network management station to the ASMi-52 Ethernet port designated 10/100BASE-T.
2. Configure the host IP parameters of the ASMi-52 unit via an ASCII terminal.
3. Run an SNMP management application, such as RAD's RADview, open Telnet session, or manage ASMi-52 via ConfiguRAD.

➤ **To start ConfiguRAD session:**

1. Start a Web browser.
2. Disable any pop-up blocking software, such as Google Popup Blocker.
3. Enter the IP address of the ASMi-52 in the address field of the browser in the following format: **http://<IP address>** and then press **<Enter>** to command the browser to connect (**IP address** stands for the actual ASMi-52 IP address which has to be assigned via an ASCII terminal).
4. In the Login screen, click **LOGIN** to start the ConfiguRAD management session.

Figure 4-1. ConfiguRAD Login

Managing ASMi-52 via Dedicated Timeslot

ASMi-52 modems with E1 or T1 interface can be managed via dedicated E1/T1 timeslot (DTS) (see *Figure 4-2*).

The DTS is a management channel that connects directly to ASMi-52 host using a separate IP interface, i.e. separate IP address and IP mask. If the LAN and dedicated timeslot services are configured to have the same IP, the management session over dedicated timeslot has priority over management via 10/100BaseT port.

1. Connect E1/T1 line to the ASMi-52 E1 or T1 port.
2. Start a terminal management session and do the following:
   - Assign IP address and IP mask to the dedicated timeslot interface
   - Enable DTS management
   - Assign E1/T1 timeslot for the management traffic
3. Run an SNMP management application, such as RAD's RADview, open Telnet session, or manage ASMi-52 via ConfiguRAD.

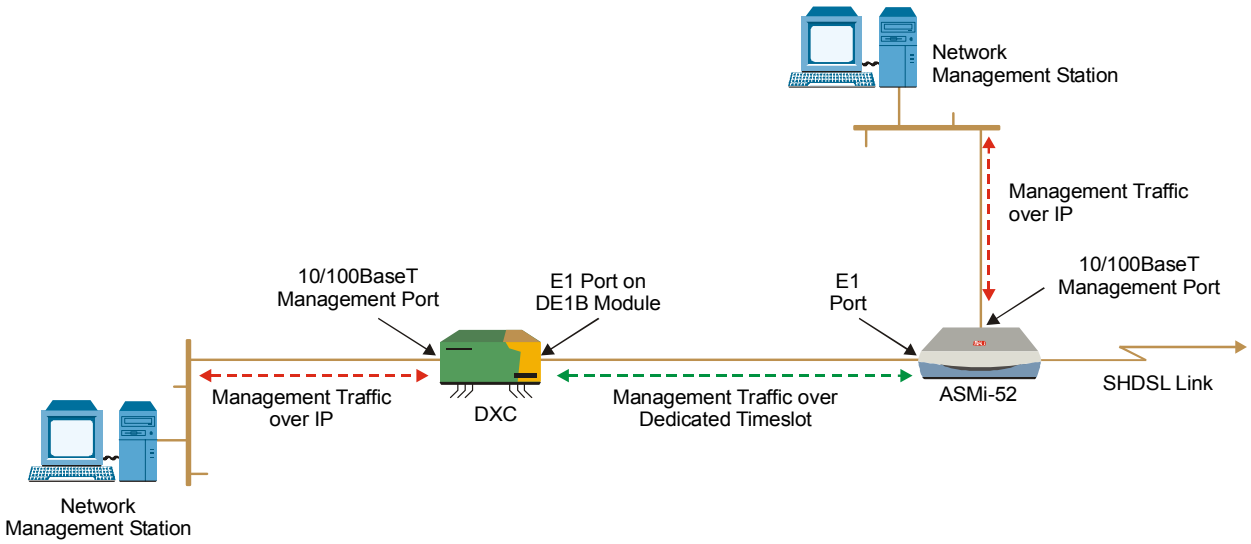

Figure 4-2. Managing ASMi-52 via LAN Port and Dedicated Timeslot

4.2 Navigating the Management Menus

This section provides a general description of the software menu operation and conventions for navigating the menus.

Appendix C shows a map of the management menus in the ASMi-52 embedded software.

Choosing Options

➤ **To choose an option (terminal session):**

- Type the number corresponding to the option, and press **<Enter>**.

  The screen for the selected option is displayed.

Note *When a menu option has only two values, typing the option number and pressing **<Enter>** will scroll between the available values.*

Some of the ASMi-52 menus have a 'Save' option. When choosing options from these menus, you must confirm your choice by typing the number corresponding to the 'Save' option, otherwise your entry will be ignored.

➤ **To choose an option (ConfiguRAD session):**

1. Click a link in the ConfiguRAD screen to display the next menu.
2. Once the target screen is displayed, select a value from the drop-down box.

Correcting Entries

➤ **To correct an erroneous entry:**

- Press **<Backspace>** to clear the error, then enter the correct characters.
  or
  Press **<Esc>** to exit the current menu, and then return to the menu to re-enter the required value.

Navigating Data Forms

Some of the ASMi-52 management software screens are data forms, which are bigger than regular menus and require scrolling to navigate between parameters. For example, the Inventory screen (*Figure 4-7*) or Manager List menu (*Figure 4-11*) are considered data forms.

Use the following keys (case-sensitive) for the data form navigation:

- **L** – move left, **l** – scroll left,
- **R** – move right, **r** – scroll right
- **U** – move up, **u** – scroll up
- **D** – move down, **d** – scroll down
- **<Tab>** – select next changeable cell.

Note *You can display these navigation keys by typing **<?>** from a data form.*

Navigating the ConfiguRAD Menus

ConfiguRAD is a Web-based remote access terminal management software. It provides a user-friendly interface for configuring, collecting statistics and performing diagnostic tests on the ASMi-52 units.

➤ **To choose an option:**

1. Click a link in the ConfiguRAD screen to display the next menu.
2. Once the target screen is displayed, select a value from the drop-down box or enter it in a text box.

Some of the ASMi-52 menus have a 'Save' option. When choosing options from these menus, you must confirm your choice by selecting 'Save', otherwise your entry will be ignored.

At the left-hand bottom corner ConfiguRAD provides some auxiliary management tools:

- Status – shows the number of users currently managing ASMi-52
- Trace – opens an additional pane for system messages, progress indicators (ping, software and configuration file downloads) and alarms. It is recommended to keep the trace pane open all the time.
- Refresh All – refreshes performance registers.

Logging Out

➤ **To end the current session:**

- In the Main menu, click **Logout** or type **&** in a terminal management screen.

Note *ASMi-52 allows only one management session to be active at a time. If the Web-based management session was not ended properly (for example, by closing the Web browser window), you have to wait five minutes before attempting the next log-in. If you try to log in during the five-minute security timeout, ASMi-52 does not allow to proceed to the Main menu, displaying 'Too Many Users' message. Likewise, the Web-based management session cannot be initiated, if a terminal or Telnet session is still in progress.*

4.3 Entering the User Name and Password

Once you have installed the ASMi-52 modems at the central and remote locations, and completed the installation and operation procedures described in *Chapter 2* and *Chapter 3*, you can start a control session.

You have to enter a user name and password in order to start the ASMi-52 management software (see *Figure 4-3* and *Figure 4-4*).

```
                                ASMi-52

USER NAME:

PASSWORD:
```

Figure 4-3. Password Request Screen (Terminal Session)

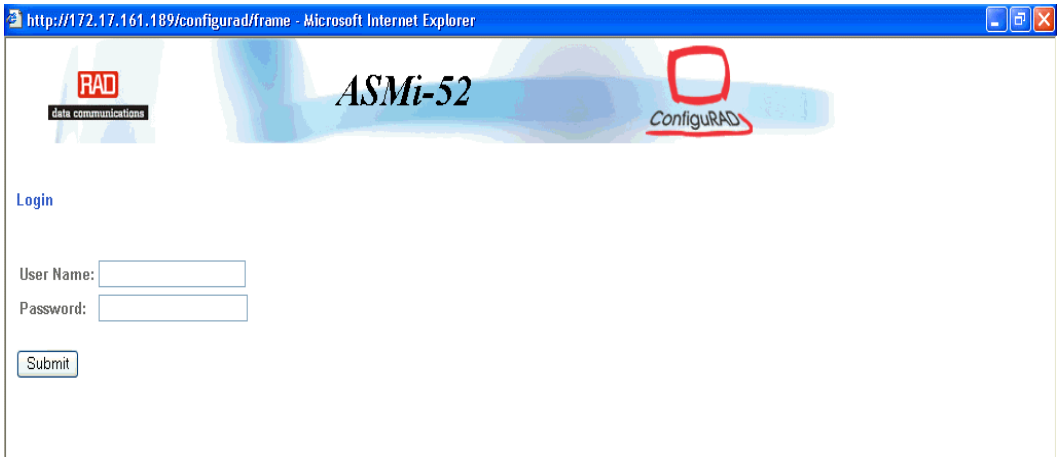

Figure 4-4. Password Request Screen (ConfiguRAD Session)

➤ **To enter the user name and password:**

1. Type in your user name and press **<Tab>**.

Note *You can leave the user name field empty (default), the default password is **1234.***

2. Type in your password at the > prompt (up to eight characters).
   ASMi-52 responds to your entry with asterisks.
3. Press **<Enter>**.
   The Main menu is displayed (see *Figure 4-5* and *Figure 4-6*).

```
                                ASMi-52

Main Menu

1. Inventory
2. Configuration
3. Monitoring
4. Diagnostics
5. File Utilities

>

ESC-prev.menu; !-main menu; &-exit; @-scroll
```

Figure 4-5. Main Menu (Terminal Session)

Figure 4-6. Main Menu (ConfiguRAD Session)

4.4 Displaying the ASMi-52 Inventory

The ASMi-52 inventory displays information on the functional blocks of the local or remote modem.

ASMi-52 consists of the following components:

- SHDSL unit
- DTE unit
- Terminal control port
- 10/100BASE-T port
- Alarm relay port
- Power supply.

➤ **To display the ASMi-52 inventory:**

1. From the Main menu, select **Inventory**.

   The Inventory screen appears (see *Figure 4-7*).

2. Use the following keys to move around the indexs.

- **L** – move left, **l** – scroll left,
- **R** – move right, **r** – scroll right
- **U** – move up, **u** – scroll up
- **D** – move down, **d** – scroll down
- **<Tab>** – select next changeable cell.

```
                              ASMi-52
Inventory
   1
   Index               1001
   Description         RAD-local ASMi-52_M shdsl modem
   Vendor type
   Contained in        0
   Class               3
   Rel pos             0
   Name                shdsl modem
   HW ver              0.00
   SW ver              1.00E54
      ->>
>
ESC-prev.menu; !-main menu; &-exit; @-scroll; ?-help
```

Figure 4-7. Inventory Screen

4.5 Configuring ASMi-52 System Parameters

This section describes the procedures for configuring system parameters of ASMi-52.

➤ **To access the Configuration menu:**

- From the Main menu, select **Configuration**.

  The Configuration menu appears (see *Figure 4-8*).

```
                              ASMi-52
Configuration >
1. System configuration >
2. Physical ports configuration >

>
ESC-prev.menu; !-main menu; &-exit; @-scroll
```

Figure 4-8. Configuration Menu

The ASMi-52 management software allows you to perform the following:

- Configuring master clock
- Enabling or disabling low speed operation
- Defining management parameters (IP parameters, system information etc)
- Configuring 10/100Base-T port
- Defining control port parameters
- Resetting ASMi-52 to the defaults
- Performing the overall reset of the device or resetting its SHDSL interface.

➤ **To display the System Configuration menu:**

- From the Configuration menu, select **System Configuration**.

  The System Configuration menu appears (see *Figure 4-9*).

```
                              ASMi-52
System Configuration >
1.  Master clock              >(Internal)
2.  Low Speed Operation        (No)
3.  Management                 >
4.  LAN Configuration          >
5.  Control port               >
6.  Factory default            >
7.  Reset                      >
8.  Save
>
ESC-prev.menu; !-main menu; &-exit; @-scroll
```

Figure 4-9. System Configuration Menu

Configuring the Master Clock

ASMi-52 modems support receive, external and internal clock modes.

When configured to the internal or external clock, ASMi-52 modem operates as an STU-C unit. When configured to the receive clock, ASMi-52 operates as an STU-R unit.

➤ **To configure the master clock:**

1. From the System Configuration menu, select **Master Clock**.

   The Master Clock menu appears (see *Figure 4-10*).

2. From the Master Clock menu, select the appropriate clock by choosing **Receive**, **Internal**, or **External**.

   The System Configuration menu returns.

3. From the System Configuration menu, select **Save** to save the changes.

```
                              ASMi-52
Master clock (Internal)
1. Receive
2. Internal
3. External
>
ESC-prev.menu; !-main menu; &-exit; @-scroll
```

Figure 4-10. Master Clock Menu

Configuring Low Speed Operation

ASMi-52 can be configured to work at 64/128 kbps (2-wire) and 64/128/192/256 kbps (4-wire) when operating opposite devices with E1 DTE interface. The maximum data rate of ASMi-52 working in the low speed mode is 2048 kbps.

➤ **To enable the low speed operation:**

1. From the System Configuration, select **Low Speed Operation**.

   The option value changes to Yes or No.

2. From the System Configuration, select **Save** to save the change

3. Reset the ASMi-52.

   On start up the unit will operate in low speed mode.

Configuring Management Parameters

You must define the ASMi-52 internal SNMP agent parameters in order to enable SNMP and Telnet management (see *Figure 4-11*). Also you can enter additional information about your ASMi-52, such as contact person, unit location etc.

➤ **To access the Management menu:**

- From the System Configuration menu, select **Management**.

  The Management menu appears (*Figure 4-11*).

```
                          ASMi-52
Management
1. Device Info                          >
2. Host IP                             >
3. Manager List                         >
4. Management access                    >
5. DTS Configuration                    >
6. MTU (64 - 1540)           ...(1540)
7. Save
>
ESC-prev.menu; !-main menu; &-exit; @-scroll
```

Figure 4-11. Management Menu

Note *DTS Configuration is available only for the units with the E1/T1 DTE interfaces.*

Entering Device Information

The Device Information menu allows you to assign a name to ASMi-52, define its location and contact person. These entries may include up to 20 characters.

➤ **To enter device information:**

1. From the Management menu, select **Device Info**.

   The Device Info menu appears (see *Figure 4-12*).

2. From the Device Info menu, select **Sys Contact** and enter name of a contact person; select **Sys Location** and enter description of the ASMi-52 location; select **Sys Name** and enter a name of the unit.

Note *Information entered into the Sys Name field appears at the top of the configuration screens after the product name.*

3. Press **<Esc>** to return to the Management menu (see *Figure 4-11*).
4. From the Management menu, select **Save** to save your changes.

➤ **To clear system parameters:**

1. From the Device Info menu, select **Clear sys param**.

   ASMi-52 displays the following message:
   `Are you sure !!! Clear (Y/N)`

2. Type **Y** to confirm the deletion.

   ASMi-52 deletes all device info parameters.

```
                              ASMi-52
Device Info
Sys description     ASMi-52  HW Version: 0.00, SW Version: 1.00E54)
1. Sys contact                                ()
2. Sys location                               ()
3. Sys name                                   (ASMi-52)
4. Clear sys params
>
ESC-prev.menu; !-main menu; &-exit; @-scroll
```

Figure 4-12. Device Information Menu

Configuring the Host Parameters

ASMi-52 can be managed by a network management station, which is located on the LAN connected to the 10/100BaseT port. In order to establish a proper connection, it is necessary to configure the following: host IP address, subnet mask, default gateway, its trap, read and write communities.

➤ **To define the IP parameters:**

1. From the Management menu, select **Host IP**.

   The Host IP menu appears (see *Figure 4-13*).

2. From the Host IP menu, type the following:
   - **1** to define the host IP address
   - **2** to define the subnet mask
   - **3** to set the default gateway IP address
   - **4** to enter the name of a community with read-only authorization
   - **5** to enter the name of a community with write authorization
   - **6** to enter the name of a community to which ASMi-52 will send traps.
3. Press **<Enter>**.

4. Press **<Esc>** to return to the Management menu (see *Figure 4-11*).
5. From the Management menu, select **Save** to save your changes.

```
                              ASMi-52
Host IP
1. Host IP address                    (0.0.0.0)
2. Host IP mask                       (255.255.255.0)
3. Host default gateway               (0.0.0.0)
4. Read community                     (public)
5. Write community                    (public)
6. Trap community                     (public)
>
ESC-prev.menu; !-main menu; &-exit; @-scroll
```

Figure 4-13. Host IP Menu

Configuring the Network Managers

Define or modify the network management stations to which the SNMP agent of ASMi-52 will send traps. Up to ten managers can be defined. Entering the IP address and corresponding subnet mask defines each management station.

➤ **To configure the network managers:**

1. Display the **Manager List** menu. (Path: Main menu > Configuration > System Configuration > Management > Manager List)

   The Manager List menu appears (see *Figure 4-14*).
2. From the Manager List menu, type a number corresponding to network management station that you intent to define or modify, and enter its new IP address.
3. Type a number corresponding to a subnet mask of the already defined network management station, and enter a new value.
4. Repeat step 2 and step 3 to define additional management stations.
5. Press **<Esc>** to return to the Management menu (see *Figure 4-11*).
6. From the Management menu, select **Save** to save your changes.

```
                                    ASMi-52
Manager List
 1. MNG 1  IP      ... (0.0.0.0)        12. MNG 2  MASK    ... (0.0.0.0)
 2. MNG 2  IP      ... (0.0.0.0)        13. MNG 3  MASK    ... (0.0.0.0)
 3. MNG 3  IP      ... (0.0.0.0)        14. MNG 4  MASK    ... (0.0.0.0)
 4. MNG 4  IP      ... (0.0.0.0)        15. MNG 5  MASK    ... (0.0.0.0)
 5. MNG 5  IP      ... (0.0.0.0)        16. MNG 6  MASK    ... (0.0.0.0)
 6. MNG 6  IP      ... (0.0.0.0)        17. MNG 7  MASK    ... (0.0.0.0)
 7. MNG 7  IP      ... (0.0.0.0)        18. MNG 8  MASK    ... (0.0.0.0)
 8. MNG 8  IP      ... (0.0.0.0)        19. MNG 9  MASK    ... (0.0.0.0)
 9. MNG 9  IP      ... (0.0.0.0)        20. MNG 10 MASK    ... (0.0.0.0)
10. MNG 10 IP      ... (0.0.0.0)
11. MNG 1  MASK    ... (0.0.0.0)
>
ESC-prev.menu; !-main menu; &-exit; @-scroll
```

Figure 4-14. Manager List Menu

Controlling the Management Access

You can enable or disable access to the ASMi-52 management system via SNMP, Telnet or Web-based application (ConfiguRAD). By disabling SNMP or Telnet, you prevent unauthorized access to the system when security of the ASMi-52 IP address has been compromised. When SNMP, Telnet and Web access is disabled, ASMi-52 can be managed via an ASCII terminal only.

➤ **To define the management access method:**

1. From the Management menu, select **Management Access**.

   The Management Access menu appears (see *Figure 4-15*).

2. From the Management Access menu, select **SNMP Allowed** to enable SNMP access, select **TELNET Allowed** to enable Telnet access, or select **WEB Allowed** to enable management via Web browser.

   The access value toggles between **Access Allowed** and **No Access**.

Note *Currently the SNMP Allowed parameter is permanently set to **Access Allowed**.*

3. Press **<Enter>** when a desired value is displayed.
4. Press **<Esc>** to return to the Management menu (see *Figure 4-11*).
5. From the Management menu, select **Save** to save your changes.

```
                                ASMi-52
Management Access

1. SNMP allowed                    (access allowed)
2. TELNET allowed                  (access allowed)
3. WEB allowed                     (access allowed)
>
ESC-prev.menu; !-main menu; &-exit; @-scroll
```

Figure 4-15. Management Access Menu

Configuring Dedicated Timeslots

ASMi-52 units with E1 or T1 port support management via a dedicated timeslot. A remote E1 device can be managed via DTS if the DTS mode is enabled in both the CO unit and the CPE unit. The MNG timeslot is transferred over the SHDSL to the E1 CPE, the CPE forwards the MNG timeslot over the E1 line to the next device in the chain.

Note *Allocate the same timeslot number for MNG in all devices in the chain. With DTS mode enabled in all devices, then the chain can be managed remotely from one NMS.*

In T1 systems, the DTS is manages the local unit only, it is not forwarded over SHDSL.

➤ **To configure dedicated timeslots:**

1. From the Management menu, select DTS Configuration.

   The DTS Configuration menu is displayed (see *Figure 4-16*).

2. From the DTS Configuration menu, configure the dedicated timeslot in the following order:
   - Assign DTS IP address
   - Assign DTS IP mask
   - Enable DTS mode.
3. Check the status of the DTS configuration in the Rem Agent Table (see *Figure 4-17*).
4. From the Management menu, select **Save** to save the changes.

   In the Map Timeslot menu (*Figure 4-38*), the dedicated timeslot value changes to MNG (management).

```
                              ASMi-52
DTS Configuration
1. DTS Mode                          (Enable)
2. DTS IP Address                    (1.1.1.1)
3. DTS IP Mask                       (255.255.255.0)
4. Rem Agent Table          []>
>
ESC-prev.menu; !-main menu; &-exit; @-scroll
```

Figure 4-16. DTS Configuration Menu

```
                              ASMi-52
Rem Agent Table
       SOURCE IP            DESTINATION IP        PORT
     172.17.161.30         255.255.255.255         DTS
     172.17.161.34            224.0.0.9            DSL
     172.17.161.182           224.0.0.9            DSL
     172.17.160.104         172.17.161.186         DTS
>
ESC-prev.menu; !-main menu; &-exit; @-scroll; ?-help
```

Figure 4-17. Rem Agent Table

Configuring the LAN Port

ASMi-52 includes a 10/100BaseT port that can be used as a user or management port. The LAN port operates in a self-learning bridge or transparent mode, with or without autonegotiation.

Note *If the LAN port serves as a management port only, it operates in transparent mode with autonegotiation enabled.*

Configuring LAN Port Operation Mode

In the transparent mode the LAN port operates with disabled filter, passing all frames transparently. When operating as a self-learning bridge, the LAN port filters the packets received from the local LAN and transfers through the link only frames destined to another LAN.

➤ **To configure the LAN operation mode:**

1. From the System Configuration menu, select **LAN Configuration**.

   The LAN Configuration menu appears (see *Figure 4-18*).

2. From the LAN Configuration menu, select **Operation Mode**.

   The Operation Mode menu appears.

3. From the Operation Mode menu, select **Transparent** to enable transparent mode, or select **Bridge** to enable bridge mode.

Note *Currently for the units with the serial, E1 or T1 DTE interfaces the Operation Mode is permanently set to **Transparent**. For the modems with the 10/100BaseT user LAN interface it is set to **Bridge**.*

   The LAN Configuration menu appears.

4. From the LAN Configuration menu, select **Save** to save your changes.

```
                                ASMi-52
LAN Configuration

Operation Mode                          (Bridge)
Bridging Mode                           (Switching)
1. Bridge Table                         []>
2. Aging Timeout(sec)[10 - 1000000]     (10)
3. Auto negotiation                     (Enable)
4. Max AutoNeg Capability               (100BASE_T-full duplex mode)
5. Fault indication                     (Yes)
6. LAN rate                             (2304)
7. Save
>
ESC-prev.menu; !-main menu; &-exit; @-scroll
```

Figure 4-18. LAN Configuration Menu

Filling out the Bridge Table

When the 10/100BaseT port operates in the bridge mode, you can assign MAC addresses to the local or remote LAN.

➤ **To fill out the bridge table:**

1. From the LAN Configuration menu, select **Bridge Table**.

   The Bridge Table appears (see *Figure 4-19*).

```
                                ASMi-52
Bridge Table
MAC Address              Port             Type
1. 0010b340500           LAN              Static
2. 0040e108070           DSL              Static
3. 00000000000                            Static
>
ESC-prev.menu; !-main menu; &-exit; ?-help
```

Figure 4-19. Bridge Static Table, Normal Mode

2. From the Bridge Table, select an empty cell (the one with MAC address 0000000000 and unassigned port) by typing **D** to move the cursor down or **U** to move it up.

   You can also select an existing MAC address to reassign it.

3. Once the MAC address is selected, type **m** to enable editing mode.

   The Bridge Table enters editing mode (see *Figure 4-20*).

4. In the editing mode, select **MAC Address** and enter a MAC address value.

5. Select **Port** and assign the current MAC address to the local LAN by entering **LAN** or to remote LAN by entering **DSL**.

6. Select **Save All** to save the changes.
7. Press **<Esc>** to exit the editing mode.

➤ **To remove MAC address from the table:**

1. From the Bridge Table, select MAC address that you intend to remove from the static table.
2. Enter editing mode, as explained above.
3. Enter all zeros for the MAC address value and save the change.

```
                              ASMi-52
Bridge Table

         Type            (Static)
1.    MAC Address ...   (00000000000)
2.    Port        ...   ()
>
ESC-prev.menu; !-main menu; &-exit; ?-help
```

Figure 4-20. Bridge Table, Editing Mode

Configuring Aging Timeout

The aging time is the timeout period in seconds for aging out dynamically learned forwarding information. When the timeout period is over, the bridge removes all inactive nodes from its database.

➤ **To configure aging timeout:**

1. From the LAN Configuration menu, select **Aging Timeout**.
2. Enter a new aging timeout value in seconds and press **<Enter>**.
3. Select **Save** to save the change.

Setting the LAN Rate

When the LAN port of ASMi-52 is used for the DTE connection, the DTE rate is configured via the LAN rate menu. The LAN rate depends on the rate mode (regular or low speed, see *Configuring Low Speed Operation* above) and the line interface (2-wire or 4-wire).

Note *ASMi-52 units operating in the receive clock mode automatically detect LAN rate of the central units and configure themselves accordingly.*

➤ **To set the LAN rate:**

1. From the LAN Configuration menu, select **LAN Rate**.
   The LAN Rate menu appears (see *Figure 4-21*).
2. From the LAN Rate menu, select the desired data rate.
   The LAN Configuration menu appears.
3. From the LAN Configuration menu, select **Save** to save the new value.

```
                                ASMi-52
Data Rate (2304 Kbps)
1. 64 Kbps       12.  768 Kbps        23.  1472 Kbps
2. 128 Kbps      13.  832 Kbps        24.  1536 Kbps
3. 192 Kbps      14.  896 Kbps        25.  1600 Kbps
4. 256 Kbps      15.  960 Kbps        26.  1664 Kbps
5. 320 Kbps      16.  1024 Kbps       27.  1728 Kbps
6. 384 Kbps      17.  1088 Kbps       28.  1792 Kbps
7. 448 Kbps      18.  1152 Kbps       29.  1856 Kbps
8. 512 Kbps      19.  1216 Kbps       30.  1920 Kbps
9. 576 Kbps      20.  1280 Kbps       31.  1984 Kbps
10. 640 Kbps     21.  1344 Kbps       32.  2048 Kbps
11. 704 Kbps     22.  1408 Kbps       33.  2304 Kbps
>

ESC-prev.menu; !-main menu; &-exit; @-scroll
```

Figure 4-21. LAN Rate Menu (2-WireVersion)

Configuring Autonegotiation

ASMi-52 autonegotiation allows you to operate at the fastest data rate available. With autonegotiation enabled, the ASMi-52 unit automatically determines between itself and the DTE the fastest data rate and duplex mode that they can operate. With autonegotiation disabled, the LAN interface of ASMi-52 operates at the speed and duplex mode that is configured by the Max AutoNeg capability.

➤ **To set the autonegotiation:**

1. From the LAN Configuration menu, select Autonegotiation.

   Toggle between **Enable** and **Disable**.

2. If the autonegotiation is enabled, choose **Max AutoNeg Capability** from the LAN Configuration menu.

   The Set Capability menu appears.

3. Select the desired LAN operation mode by choosing one of the following:
   - 10BaseT half duplex
   - 10BaseT full duplex
   - 100BaseT half duplex
   - 100BaseT full duplex.

4. If the autonegotiation is disabled, choose **Default Type** from the LAN Configuration menu.

   The Set Default menu appears.

5. Select the desired LAN operation mode by choosing one of the following:
   - 10BaseT half duplex

- 10BaseT full duplex
- 100BaseT half duplex
- 100BaseT full duplex.

6. From the LAN Configuration menu, select **Save**.

Configuring Fault Indication

If ASMi-52 fault indication is enabled and a fault condition or loss of signal is detected on the line, the Ethernet link is disconnected by ASMi-52. If fault indication is not selected, fault conditions are not passed through to the LAN side.

➤ **To set the fault indication:**

1. From the LAN Configuration menu, select fault indication.
   Toggle between Yes and No.
2. Select **Save** to save your changes

Configuring Control Port Parameters

ASMi-52 embedded software enables you to configure the Control port parameters.

➤ **To access the Control port menu:**

- From the System Configuration menu, select **Control Port**.
  The Control Port menu appears (see *Figure 4-22*)

```
                              ASMi-52
Control Port
1. Rate                        >(9600)
2. Interface                    (DCE)
3. CTS                          (=RTS)
4. DSR                          (DTR)
5. Port Control                >
6. Save
>
ESC-prev.menu; !-main menu; &-exit; @-scroll
```

Figure 4-22. Control Port Menu

Changing the Control Port Data Rate

The control port of ASMi-52 supports different data rates that can be configured via the Rate menu (see *Figure 4-23*).

➤ **To configure the control port data rate:**

1. From the Control Port menu, select **Rate**.
   The Rate menu appears (see *Figure 4-23*).
2. Select the terminal rate by typing the number corresponding to the desired value, and press **<Enter>**.

3. Select **Save** to save the changes.

```
                                ASMi-52
Rate (9600 kbps)
1. 9600 kbps
2. 19200 kbps
3. 38400 kbps
4. 57600 kbps
5. 115200 kbps
>
ESC-prev.menu; !-main menu; &-exit; @-scroll
```

Figure 4-23. Control Port Rate Menu

Selecting the Control Port Interface

➤ **To select the control port interface:**

1. From the Control Port menu, select **Interface** to choose the control port interface: **DCE** (direct connection to the terminal via a straight cable) or **DTE** (terminal connection via modem or data link).

   The display is refreshed and the new value appears.

2. Select **Save** to save the changes.

Selecting the CTS State

➤ **To select the CTS state:**

1. From the Control Port menu, select **CTS** to choose the CTS state: **ON** (constantly ON) or **=RTS** (follows the RTS line).

   The display is refreshed and a new value appears.

2. Select **Save** to save the changes.

Selecting the DSR State

➤ **To select the DSR state:**

1. From the Control Port menu, select **DSR** to choose the DSR state: **ON** (constantly ON) or **DTR** (follows the DTR line).

   The display is refreshed and a new value appears.

2. Select **Save** to save the changes.

Changing the Terminal Parameters

The Port Control menu allows you to do the following:

- Setting port mode (terminal, dial out or SLIP)
- Managing user name and password
- Enabling or disabling pop-up alarms
- Defining security timeout
- Configuring dial-out parameters.

➤ **To access the Port Control menu:**

- **Path**: Main Menu > Configuration > Control Port > Port Control.

  The Port Control menu appears (see *Figure 4-24*).

```
                              ASMi-52
Port Control
1. Port Control Mode                    > (Terminal)
2. Terminal                            >
3. Dial out                            >
4. Save
>
ESC-prev.menu; !-main menu; &-exit; @-scroll
```

Figure 4-24. Port Control Menu

Configuring Port Control Mode

CONTROL port of ASMi-52 operates in one of the following modes:

- Terminal – direct connection to the control terminal (DCE mode) or to modem (DTE mode)
- Dial-out – connection to dial-out modem for alarm reporting
- SLIP – connection to management station via Serial Line Internet Protocol.

Note *Currently connection to ASMi-52 via SLIP is disabled.*

➤ **To configure port control mode:**

1. From the Port Control menu, select **Port Control**.

   The Port Control Mode menu appears (see *Figure 4-25*).

```
                              ASMi-52
Port Control Mode (Terminal)
1. Terminal
2. Dial out
3. SLIP
>
ESC-prev.menu; !-main menu; &-exit; @-scroll
```

Figure 4-25. Port Control Mode Menu

2. From the Port Control Mode menu, select desired operation mode.

   The Port Control menu appears.

3. From the Port Control menu, select **Save** to save the change.

Configuring User Name, Password, Pop-up Alarms and Security Timeout

User name, password, pop-up alarms and security timeout are configured via Terminal menu.

➤ **To access Terminal menu:**

- From the Port Control menu, select **Terminal**.

  The Terminal menu appears (see *Figure 4-26*).

```
                              ASMi-52
Terminal

1. Change access                >
2. POP ALARM                    (OFF)
3. Security timeout             (10 min)
4. Save
>
ESC-prev.menu; !-main menu; &-exit; @-scroll
```

Figure 4-26. Terminal Menu

➤ **To change the user name and password:**

1. From the Terminal menu, select **Change Access**.

   The following dialog appears:

```
                              ASMi-52
Change Access
1. User name                            ...()
2. Password...
3. Clear User Name                      ...
4. Clear Password                       ...
>
ESC-prev.menu; !-main menu; &-exit; @-scroll
```

2. Select **User Name** to enter a new user name, select **Password** to enter a new password, select **Clear User Name** to delete the current user, or **Clear User Name** to delete the current password.
3. Enter a new user name or password and press **<Enter>**.

   The Terminal menu appears.
4. From the Terminal menu, select **Save** to save the changes.

➤ **To enable or disable the pop-up alarms:**

When the pop-up function is enabled, ASMi-52 displays the active alarms at the bottom of the terminal screen. When the fault condition that caused the alarm is cleared, the alarm is removed from the screen

1. From the Terminal menu, select **Pop Alarm** to choose the pop-up alarms mode: **ON** (pop-up alarms are enabled) or **OFF** (pop-up alarms are disabled).

   The display is refreshed and the new value appears.
2. Select **Save** to save the changes.

➤ **To configure the security timeout:**

1. From the Terminal menu, select **Security Timeout** to configure the timeout: **FOREVER** (timeout is disabled) or **10 MIN** (idle disconnect time – 10 min).

   The display is refreshed and a new value appears.

2. Select **Save** to save the changes.

➤ **To change the dial-out parameters:**

When the CONTROL port is configured to the dial out mode, you must specify the dial-out parameters of the port. This enables ASMi-52 to build the call command that is sent to the dial-out modem. When connecting the dial-out modem, you must use a cross cable (see *Appendix A* for the cross cable pinout).
The modem connected to the CONTROL connector must be set up as follows (for convenience, the Hayes commands required to select the specified parameters are listed in brackets):

- Auto-answer mode (**`AT S0=1`** and **`AT S1=1`**)
- Call set up in response to the **`CONNECT`** string (**`AT X0`**)
- No echo (**`AT E0`**)
- Verbose mode (no codes, e.g., **`CONNECT`** string instead of **`0`**) (**`AT V1`**).

1. From the Port Control menu (see *Figure 4-24*), select **Dial out**.

   The Dial Out menu appears (see *Figure 4-27*).

2. From the Dial Out menu, type the following:
   - **1** to instruct ASMi-52 to report all alarms (**ALL**), only major ones (**MAJOR**), or disable alarm reporting (**NONE**).
   - **2** to specify the number of dialing retries. **0**, no redialing attempts are made if the call is not established on the first attempt. **1**–**8**, if the call is not established on the first attempt, ASMi-52 makes the specified number of redials.

     This parameter applies to both primary and alternate numbers:

     - If the call is not established after dialing the primary directory number the specified number of times, ASMi-52 attempts to establish the call by dialing the alternate directory number (provided the use of an alternate number is enabled).
     - If the call cannot be established within the specified number of redialing attempts on neither of the two directory numbers, ASMi-52 stops the call attempts. When a new alarm report must be sent, the call attempts are started again. The user is notified that the call attempts failed by a message recorded in the alarm log file (separate messages are provided for each directory number).
   - **3** to specify the time (in sec) ASMi-52 waits for an answer after each dialing attempt. If the called station does not answer within the specified time, ASMi-52 disconnects. If additional call attempts are allowed, ASMi-52 redials immediately after disconnecting. The available selections are **30**, **45**, or **60** seconds.

- **4** to select the dialing mode. **TONE**, the dial-out modem is instructed to use DTMF dialing. **PULSE**, the dial-out modem is instructed to use pulse dialing.
- **5** to control the use of an alternate number. The alternate number is dialed after the specified number of call attempts on the primary number failed. **ENABLE**, the use of an alternate number is enabled. **DISABLE**, ASMi-52 stops the call attempts after the specified number of call attempts on the primary number failed.
- **6** to specify a primary number to dial.
- **7** specify an alternate number to dial.

3. Select **Save** to save the changes.

```
                              ASMi-52
Dial out
1. Call Out Mode                      (None)
2. Number of Retries [0-8]            (1)
3. Wait for connect                   (30 sec)
4. Dial mode                          (Tone)
5. Alternate number mode              (Disable)
6. Primary number                     ()
7. Alternate number                   ()
8. Save
>
ESC-prev.menu; !-main menu; &-exit; @-scroll
```

Figure 4-27. Control Port Dial Out Menu

4.6 Configuring the Physical Ports

The SHDSL and DTE interfaces of the ASMi-52 modem are configured via the Physical Ports Configuration menu. In addition, this menu allows you to configure the SHDSL repeaters (if they are installed in line).

➤ **To access the Physical Ports Configuration menu:**

- From the Configuration menu (*Figure 4-8*), select **Physical Ports Configuration**.

Note *The second line of the Physical Port configuration menu changes according to the DTE interface installed in ASMi-52. The possible options are:*

- *DTE Configuration for ASMi-52 units with a serial interface (V.35, X.21 or RS-530)*
- *E1 Configuration for ASMi-52 units with E1 interface*
- *T1 Configuration for ASMi-52 units with T1 interface*
- *Blank for ASMi-52 units with 10/100BaseT user interface.*

Configuring the SHDSL Interface

The ASMi-52 configuration software allows you to change the modem's transmission mode (Annex A or Annex B).

Examples given below illustrate the local device configuration procedures.

➤ **To change the transmission mode:**

1. Display the SHDSL Device Configuration menu (Configuration > Physical Ports Configuration > SHDSL Configuration menu > SHDSL Device Configuration).
   SHDSL Device Configuration menu appears (see *Figure 4-28*).
2. Select **Transmission Mode** to choose transmission mode: Annex A or Annex B.
   The display is refreshed and a new value appears.
3. Select **Save** to save the changes.

Note *ASMi-52 units operating in the receive clock mode automatically detect standard compatibility value of the central units and configure themselves accordingly.*

```
                              ASMi-52
SHDSL local device configuration

1. Transmission mode :     (Annex B)
2. Save
>

ESC-prev.menu; !-main menu; &-exit; @-scroll
```

Figure 4-28. SHDSL Device Configuration Menu

Configuring the Power Backoff

You can determine if the transmitted power backoff is used.

➤ **To configure the use of the power backoff:**

1. From the SHDSL Configuration menu, select **SHDSL Port Configuration**.
   SHDSL Port Configuration menu appears.
2. Select **Power backoff** to enable or disable power backoff.
   The display is refreshed and a new value appears.
3. Select **Save** to save the changes.

```
                                ASMi-52
SHDSL local port configuration
1. Power backoff                                    (Enable)
2. Snext margin                                     (Disable)
3. Current margin                                   (Disable)
4. Asym PSD                                         (Symmetrical)
5. Line prob                                        (Adaptive rate)
6. Configured wire                                  (2W)
7. Loop attenuation threshold (dB) [0-127]          (0)
8. SNR margin threshold (dB) [0-15]                 (0)
9. Save
>
ESC-prev.menu; !-main menu; &-exit; @-scroll
```

Figure 4-29. SHDSL Port Configuration Menu

Notes

- *After changing the Configured Wire option, ASMi-52 must be reset to implement the change.*
- *When operating in Line prob. Adaptive rate, and the clock is internal, the rate is limited up to 2048 bps.*

Configuring the Snext Margin

The Snext margin indicates the minimum desired target margin with a worst-case self next noise model given current loop insertion (49 SHDSL next is considered the worst case). This setting is available only if the rate adaptation is enabled (see the line probing configuration below).

Note

Disabling the Snext margin parameter allows the use of all line rates, regardless of line condition.

➤ **To configure the Snext margin:**

1. From the SHDSL Port Configuration menu, select **Snext margin.**

   The Snext Margin menu appears (see *Figure 4-30*).

2. Select the Snext margin by typing the number corresponding to the desired value.

   SHDSL Port Configuration menu appears.

3. Select **Save** to save the changes.

```
                              ASMi-52
Snext margin (Disable Snext margin)
1.   -10                  12.     1
2.   -9                   13.     2
3.   -8                   14.     3
4.   -7                   15.     4
5.   -6                   16.     5
6.   -5                   17.     6
7.   -4                   18.     7
8.   -3                   19.     8
9.   -2                   20.     9
10.  -1                   21.     10
11.  0                    22.     Disable Snext margin
>
ESC-prev.menu; !-main menu; &-exit; @-scroll
```

Figure 4-30. Snext Margin Menu

Configuring the Current Margin

The current margin indicates the minimum desired target margin for the local line conditions during the startup sequence. This setting is available only if the rate adaptation is enabled (see the line probing configuration below).

Note *Disabling the current margin parameter allows the use of all line rates, regardless of line condition.*

➤ **To configure the current margin:**

1. From the SHDSL Port Configuration menu, select **Current margin.**

   The Current Margin menu appears. The display is identical to the Snext Margin menu, except for its title (see *Figure 4-30*).

2. Select the current margin by typing the number corresponding to the desired value, and press **<Enter>**.

   SHDSL Port Configuration menu appears.

3. Select **Save** to save the changes.

Configuring the Power Spectral Density

By configuring the power spectral density, you define the amount of power applied to the spectrum of frequencies that carry the information signal in order to achieve a satisfactory level of signal strength at the receiving end of the circuit.

The power spectral density can be configured for the ASMi-52 units with the line probing set to fixed.

The power spectral density value depends on the selected modems compatibility: Annex A or Annex B. The possible values are:

- Symmetric, supported in both Annex A and Annex B modes.
- Asymmetric, supported in Annex A at 768 kbps and in Annex B at 2048 kbps.

➤ **To configure the power spectral density:**

1. From the SHDSL Port Configuration menu, select **Asym PSD** to choose the power spectral density value: symmetrical or asymmetrical**.**

   The display is refreshed and a new value appears.

2. Select **Save** to save the changes.

Note *Remote ASMi-52 units automatically detect the line power density. This parameter is permanently set to Sym/Asym Enable and cannot be changed.*

Configuring the Line Probing

By configuring this parameter, you force ASMi-52 to perform line probing in order to find the best possible rate of transmission – adaptive rate. Or you command the modem to skip the rate adaptation phase – fixed rate.

Only central ASMi-52 units with the 2-wire line interface support fixed and adaptive rates, remote units operate with adaptive rate only.

ASMi-52 units with the 4-wire line interface support only fixed rate.

➤ **To configure the line probing:**

1. From the SHDSL Port Configuration menu, select **Line Prob**.

   The display is refreshed and a new value appears.

2. Select **Save** to save the changes.

Configuring the Line Interface Type

You can configure the ASMi-52 units with 4-wire interface to operate over 2-wire lines. Selecting the 2-wire operation mode disables pin 1 and pin 2 of the RJ-45 line connector.

➤ **To configure the line interface type for ASMi-52 units:**

1. From the SHDSL Port Configuration menu, select **Configured wire**

   The display is refreshed and a new value appears (**2W** or **4W**).

2. Select **Save** to save the changes

3. Reset ASMi-52 in order to active the change.

Setting the Loop Attenuation Threshold

Loop attenuation is difference (in dB) between the power transmitted from the ASMi-52 modem and the power received by the unit operating at the other side of the application. By setting the threshold, you instruct the modem to generate minor alarm (LOOP ATTN. OVER LINE A/B), if selected loop attenuation threshold value is exceeded.

➤ **To set the loop attenuation threshold:**

1. From the SHDSL Port Configuration menu, select **Loop attenuation threshold**.

2. Enter the desired value (**0 dB** to **127 dB**).

3. Select **Save** to save the changes.

Setting the SNR Margin Threshold

You can set signal-to-noise ratio threshold. ASMi-52 generates minor alarm (SNR MARGIN OVER LINE A/B), if the signal-to-noise ratio on the line exceeds the threshold value.

➤ **To set the SNR margin threshold:**

1. From the SHDSL Port Configuration menu, select **SNR margin threshold**.
2. Enter the desired value (**0 dB** to **15 dB**).
3. Select **Save** to save the changes.

Configuring the SHDSL Repeater

Configuration parameters of the SHDSL repeaters are similar to those of the SHDSL device, except for the following:

- Selecting repeater that you intend to configure
- Selecting power backoff for the customer and network sides of the repeater.

The SHDSL repeaters are configured via the SHDSL Repeater Configuration menu.

➤ **To access the SHDSL Repeater Configuration menu:**

- From the SHDSL Configuration menu (Configuration > Physical Ports Configuration > SHDSL Configuration menu), select SHDSL repeater configuration.

  The SHDSL Repeater Configuration menu is displayed (see *Figure 4-31*).

```
                          ASMi-52
SHDSL repeater configuration
1. Power backoff Network side                  (Disable)
2. Power backoff Customer side                 (Disable)
3. Loop Attenuation threshold (dB)[0 - 127]    (0)
4. SNR margin threshold (dB)[0 – 15]           (0)
5. Repeater number                          >    (1)
6. Save
>
ESC-prev.menu; !-main menu; &-exit; @-scroll
```

Figure 4-31. SHDSL Repeater Configuration Menu

Configuring the Serial DTE Interface

If the ASMi-52 modem is equipped with a serial data interface, the configuration software allows you to enable/disable the LLB/RLB activation from the DTE (except for X.21) and select the modem's data rate.

Configuring LLB/RLB Activation from the DTE

➤ **To enable/disable the LLB/RLB activation from the DTE:**

1. From the Physical Ports Configuration menu, select **DTE Configuration**.

   The DTE Configuration menu appears (see *Figure 4-32*).

2. Select **DTE local port configuration** to configure the local DTE port or select **DTE remote port configuration** for the remote port configuration.

   DTE Local/Remote Port Configuration menu appears (see *Figure 4-33*).

3. From the DTE Local/Remote Port Configuration menu, select **LLB from DTE** to enable the LLB activation from the DTE or select RLB from DTE to enable the RLB activation from the DTE.

   The display is refreshed and a new value appears.

4. Select **Save** to save the changes.

```
                              ASMi-52
DTE configuration >
  Port number:              (1)
1. DTE local port configuration
2. DTE remote port configuration
>
ESC-prev.menu; !-main menu; &-exit; @-scroll
```

Figure 4-32. DTE Configuration Menu

```
                              ASMi-52
DTE local port configuration >
1. LLB from DTE :      (Disable)
2. RLB from DTE :      (Disable)
3. Data rate > >       (192 Kbps)
4. Save
>
ESC-prev.menu; !-main menu; &-exit; @-scroll
```

Figure 4-33. DTE Local Port Configuration Menu

Configuring the Data Rate

ASMi-52 supports multiple data rates in the range between 64 kbps and 4608 kbps, depending on the clock mode and line/DTE interface of the local and remote units (see *Table 1-2* and *Table 1-3*).

➤ **To select the data rate:**

1. From the DTE Port Configuration menu, select **Data Rate**.

   The Data Rate menu appears (see *Figure 4-34*). The ASMi-52 screen in *Figure 4-34* is with a 2-wire, internal clock configuration.

2. Select the data rate by typing the number corresponding to the desired value, and press **<Enter>**.

   The DTE Port Configuration menu appears.

3. Select **Save** to save the changes.

```
                          ASMi-52

Data Rate (384 Kbps)
 1. 64 Kbps          13. 832 Kbps        25. 1600 Kbps
 2. 128 Kbps         14. 896 Kbps        26. 1664 Kbps
 3. 192 Kbps         15. 960 Kbps        27. 1728 Kbps
 4. 256 Kbps         16. 1024 Kbps       28. 1792 Kbps
 5. 320 Kbps         17. 1088 Kbps       29. 1856 Kbps
 6. 384 Kbps         18. 1152 Kbps       30. 1920 Kbps
 7. 448 Kbps         19. 1216 Kbps       31. 1984 Kbps
 8. 512 Kbps         20. 1280 Kbps       32. 2048 Kbps
 9. 576 Kbps         21. 1344 Kbps       33. 2304 Kbps
10. 640 Kbps         22. 1408 Kbps
11. 704 Kbps         23. 1472 Kbps
12. 768 Kbps         24. 1536 Kbps
>
ESC-prev.menu; !-main menu; &-exit; @-scroll
```

Figure 4-34. Data Rate Menu

Configuring the E1 Interface

When ASMi-52 includes a G.704 E1 port, you can configure the following parameters:

- Selecting framing mode
  - Unframed – Stream of bits at 2.048 Mbps
  - G732N – Timeslot 0 contains sync word
  - G732S transparent – 16 frames per multiframe, timeslot 16 is passed transparently.
- Selecting time required for the E1port to return to normal operation after sync loss:
  - CCITT – As per requirements of ITU-T Rec.G.732
  - Fast – After 1 sec
  - 62411 – As per requirements of AT&T TR-62411 (after 10 sec).
- Enabling generation and checking of check bits for the frames transmitted on the E1 port (as per CRC-4 polynomial specified by ITU G.704). Check bits generation is available only for the G732N framing mode.
- Mapping E1 timeslots – Assigning each timeslot to carry user's data.
- Selecting a code transmitted to fill unused timeslots in the E1 frames.

The E1 port configuration is performed via the E1 Port Configuration menu.

➤ **To access the E1 Port Configuration menu:**

1. From the Physical Ports Configuration menu, select **E1 Configuration**.

   The E1 Configuration menu appears.

2. From the E1 Configuration menu, select **E1 local port configuration** for the local port configuration or select **E1 remote port configuration** for the remote port configuration.

   The E1 Port Configuration menu appears (see *Figure 4-35*).

```
                              ASMi-52
E1 Local Port Configuration
1. Framed mode                (G732N)
2. Sync mode                  (CCITT(complies with G732))
3. CRC-4                      (NO)
4. Idle code                  (ff)
5. Time slots assign
6. Units identical setting    (Yes)
7. Save
>

ESC-prev.menu; !-main menu; &-exit; @-scroll
```

Figure 4-35. E1 Port Configuration Menu

Selecting E1 Framing Mode

➤ **To select E1 framing mode:**

1. From the E1 Port Configuration menu, select **Framed Mode**.

   The Framed Mode menu appears (see *Figure 4-36*).

2. From the Framed Mode menu, select **Unframed** to choose unframed operation, type G732N to select G732N framing mode, or select **G732S transparent** to choose G732S transparent framing mode.

   The E1 Port Configuration menu appears.

3. Save the changes.

```
                              ASMi-52
Framed mode (Unframed)
1. Unframed
2. G732N
3. G732S transparent
>
ESC-prev.menu; !-main menu; &-exit; @-scroll
```

Figure 4-36. Framed Mode Menu

Selecting Resynchronization Time

You can define time required for the E1 port operating in the framed mode to normal operation after loss of synchronization:

- CCITT – As per requirements of ITU-T Rec.G.732
- Fast – After 1 sec
- 62411 – As per requirements of AT&T TR-62411 (after 10 sec).

➤ **To select resynchronization time:**

1. From the E1 Port Configuration menu, select **Sync Mode**.

   The Sync Mode menu appears (see *Figure 4-37*).

2. From the Sync Mode menu, select **CCITT** to choose CCITT mode, select **FAST** to choose FAST mode, or select **62411** to choose 62411 mode.

   The E1 Port Configuration menu appears.

3. Save the changes.

```
                              ASMi-52
Sync mode (CCITT (complies with G732))
1. CCITT (complies with G732)
2. FAST (after 1 sec)
3. 62411 (after 10 sec)
>
ESC-prev.menu; !-main menu; &-exit; @-scroll
```

Figure 4-37. Sync Mode Menu

Enabling CRC-4 Code Generation

You have to enable the CRC-4 code generation if you intend to gather statistics on the E1 performance. CRC-4 code generation is available for ASMi-52 units configured to G732N framing mode.

➤ **To enable CRC-4 code generation:**

1. From the E1 Port Configuration menu, select **CRC-4**.

   The CRC-4 value changes.

2. Save the changes.

Defining Idle Code

You can define the code transmitted to fill idle (unused) timeslot in the E1 frames.

➤ **To define idle code:**

1. From the E1 Port Configuration menu, select **Idle Code**
2. Enter desired code in the range of 00 to FF, press **<Enter>**.
3. Save the changes.

Mapping E1 Timeslots

When working with framed E1, you can assign each timeslot to carry data or transmit idle code. To assign the MNG timeslot, DTS mode must be set to enable (see *Figure 4-16*). Only one timeslot can be assigned to MNG.

➤ **To assign E1 timeslots:**

1. From the E1 Port Configuration menu, select **Time slots assign**.
   The Timeslots Map menu appears (see *Figure 4-38*).
2. Assign a timeslot to carry data by typing the corresponding number and press **<Enter>**.
   The timeslot value changes to:
   - **DATA** – timeslot is configured to carry user data
   - **MNG** – timeslot is dedicated to carry management traffic
   - **NOT_CONNECT** – timeslot is idle.
3. Repeat step 2 for all timeslots that you want to assign.
   Alternatively, you can assign all timeslots to carry data at once by selecting **FULL**, or disconnect all timeslots by selecting **CLEAR**.

Notes

- *You can configure timeslot 0 to be looped or transparent:*
  - *Looped – timeslot 0 is sent back to the E1 interface, when operating opposite remote units with a serial data interface.*
  - *Transparent – timeslot 0 is transmitted to the remote modem.*
- *If you operate ASMi-52 with the G732S transparent framing, timeslot 0 is always transparent and timeslot 16 is always connected.*
- *When operating a 2-wire ASMi-52 with E1 interface opposite ASMi-52 with V.35 interface (not in LS mode), assign at least three timeslots, excluding timeslot 0, to carry data.*
- *When operating a 4-wire ASMi-52 with E1 interface opposite ASMi-52 with V.35 interface (not in LS mode), assign at least six timeslots, excluding timeslot 0, to carry data.*

4. Once you finish assigning timeslots, press **<Esc>** return to the E1 Port Configuration menu.
5. Save the changes.

```
                                ASMi-52
Time slot map
1.  TS0    TRANS      17.  TS16    DATA       33.  FULL
2.  TS1    MNG        18.  TS17    DATA       34.  CLEAR
3.  TS2    DATA       19.  TS18    DATA
4.  TS3    DATA       20.  TS19    DATA
5.  TS4    DATA       21.  TS20    DATA
6.  TS5    DATA       22.  TS21    DATA
7.  TS6    DATA       23.  TS22    DATA
8.  TS7    DATA       24.  TS23    DATA
9.  TS8    DATA       25.  TS24    DATA
10. TS9    DATA       26.  TS25    DATA
11. TS10   DATA       27.  TS26    DATA
12. TS11   DATA       28.  TS27    DATA
13. TS12   DATA       29.  TS28    DATA
14. TS13   DATA       30.  TS29    DATA
15. TS14   DATA       31.  TS30    DATA
16. TS15   DATA       32.  TS31    DATA

ESC-prev.menu; !-main menu; &-exit; @-scroll
```

Figure 4-38. Map Timeslot Menu

Matching the Remote E1 Settings

If in your application a central ASMi-52 unit with the E1 interface operates opposite a remote ASMi-52 unit, the E1 settings of the remote device are automatically matched to those of the local modem (the Units Identical Setting value is permanently set to YES). For applications with two ASMi-52 units, the Units Identical Setting value of the local modem overrides the management commands from the supervisory terminal.

Note *For ASMi-52 units operating in G732S framing or in unframed mode, the Units Identical Setting value is permanently set to YES.*

➤ **To match the remote E1 settings:**

1. From the E1 Port Configuration menu, select **Units Identical Setting.**

   The Units Identical Setting value changes to YES.

2. Save the changes.

Configuring the T1 Interface

ASMi-52 units with T1 interface require configuration of the following parameters:

- Framing mode:
  - **Unframed** – Stream of bits at 1.544 Mbps
  - **ESF** – 24 frames per multiframe
  - **SF** – 12 frames per multiframe
- Line coding:
  - **B8ZS** – B8ZS coding
  - **AMI** – AMI coding
- Receive gain (sensitivity of the receive equalizer):
  - **Long** – -36 dB
  - **Short** – 15 dB
- Interface:
  - **DSU** – DSU interface
  - **CSU** – CSU interface
- Transmit signal mask (DSU mode) – length of a cable in feet between the ASMi-52 T1 port connector and the network access point:
  - **0 feet –** 0 to 133 ft
  - **133 feet –** 133 to 266 ft
  - **266 feet** – 266 to 399 ft
  - **399 feet** – 399 to 533 ft
  - **533 feet** – 533 to 655 ft.
- Transmit signal mask (CSU mode) – relative T1 output transmit level:
  - **7.5 dB** – attenuation of 7.5 dB relative to the nominal transmit level)
  - **15 dB** – attenuation of 15 dB relative to the nominal transmit level)
  - **22.5 dB** – attenuation of 22.5 dB relative to the nominal transmit level)
- Fbit configuration – F-bit transmission mode:
  - **Transparent** – F bits are sampled at TSER
  - **Internally Source** – F bits are sourced internally.

Note *Configuration of the sync mode, idle code, timeslot assignment and matching of T1 setting of the local and remote units is identical of that of the E1 interface. Refer to Configuring the E1 Interface section above.*

➤ **To access the T1 Configuration menu:**

1. From the Physical Ports Configuration menu, select **T1 Configuration**.

   The T1 Configuration menu appears.

2. From the T1 Configuration menu, select **T1 local port configuration** for the local port configuration or select **T1 remote port configuration** for the remote port configuration.

The T1 Port Configuration menu appears (see *Figure 4-39*).

```
                              ASMi-52
T1 Local Port Configuration
1. Framed Mode                              >(UNFRAMED)
2. Line Code                                 (B8ZS)
3. Receive Gain                              (LONG)
4. Interface                                >
5. Fbit Configuration                        (Transparent)
6. Sync Mode                                > (FAST (after 1 sec))
7. Idle code                                (ff)
8. Time slots assign                        >
9. Units identical setting                 (Yes)
10.    Save
>

ESC-prev.menu; !-main menu; &-exit; @-scroll
```

Figure 4-39. T1 Port Configuration

4.7 Displaying the ASMi-52 Status

The ASMi-52 software allows you to display the modem system and physical port information.

The status information is available via the Monitoring menu.

➤ **To access the Monitoring menu:**

- From the Main menu, select **Monitoring**.

  The Monitoring menu appears (see *Figure 4-40*).

```
                              ASMi-52
Monitoring
1. Total Alarms                             []>
2. System monitoring                        >
3. Physical ports monitoring                >
4. Open Virtual Connection

>
ESC-prev.menu; !-main menu; &-exit;
```

Figure 4-40. Monitoring Menu

Displaying the System Status

➤ **To display the system information:**

1. Display the system status menu. (**Path**: Monitoring >System monitoring > System local/remote status)
2. Select **System local status** to display the local device status information or select **System remote status** to display the remote device status information.

   The System Status screen appears (see *Figure 4-41*).

```
                              ASMi-52
System Status
   Device Type                (ASMi-52_M (PLASTIC) - STU_C-2W)
   Clock Source               (INT)
   Software Version           (1.00E54)
   Hardware Version           (0.00)
   FPGA Version               (0.05)
   Hardware Status            (NO HARDWARE FAILURE)
   PS                         (WIDE RANGE)
   MAC address                (0 00 10 40 00 0)
   IP address                 (1.1.1.1)
   Alarm Indication           (MAJOR)
   Test Indication            (OFF)
>
ESC-prev.menu; !-main menu; &-exit;
```

Figure 4-41. System Status Screen

Note *Alarms are described in Chapter 5.*

Displaying the Port Status

➤ **To display the port status information:**

1. Display the Physical Port Status menu. (Path: Monitoring menu > Physical Port Monitoring > Physical Port Status)
2. From the Physical Port Status menu select:
   - **Physical Port Local Status** to display the local port status information
   - **Physical Port Remote Status** to display the remote port status information
   - **Physical Port Repeater Status** to display repeater alarms (see *Chapter 5* for a detailed description).

   The Physical Port Local/Remote Status menu appears.
3. From the Physical Port Local/Remote Status menu, select **Port Local/Remote Status** to display the port status.

   The Port Status screen appears (see *Figure 4-42*).

```
                                ASMi-52
Port local status
   SHDSL                    (Standard ANNEX UNKNOWN, Wire mode 2W)
   SHDSL Line               (Status: NOT SYNC, State: IDLE mode)
   Framer Type              (SLOTTED T1)
   EOC compatible           (STANDARD)
   Actual PSD               (PSD UNKNOWN)
   Line rate                (not applicable)
   T1 interface             (IR-G704/BALANCE  Data rate: 1536 kbps)
   HW status                (NO HARDWARE FAILURE)
   Test status              (NONE)>
(N)
ESC-prev.menu; !-main menu; &-exit;
```

Figure 4-42. Port Status Screen

Note *The physical port alarms are described in Chapter 5.*

4. Type N to display the next page.

4.8 Accessing the Remote ASMi-52

Accessing the remote ASMi-52 is performed using a virtual connection with your terminal physically connected to the local unit.

➤ **To access the remote ASMi-52**

1. From the Monitoring menu (*Figure 4-40*), select **Open Virtual Connection**
2. The Login screen of the second ASMi-52 appears.
3. Login to the second ASMi-52

   You now have access to the second ASMi-52 menus.

Note *If no key press is sensed for a period of 10 minutes, the virtual connection closes and you are returned to the initial ASMi-52.*

➤ **To close a virtual terminal**

- From the Monitoring menu (of the second ASMi-52), select **Close Virtual Connection**

  The Main menu of the first ASMi-52 is displayed.

4.9 Updating Software Releases

This section presents procedures for installing new software releases into the ASMi-52 units, as well as swapping existing software versions in a local or remote unit.

ASMi-52 stores two software versions, each of them in one of the two 512-byte partitions of its flash memory, which also contains a boot program. The software is stored in compressed format. The active version is decompressed and loaded into the ASMi-52 RAM upon power-up. The passive software is kept for the backup purposes. By default, ASMi-52 is delivered with the active software only.

The new software releases are distributed on diskettes as an ***.img** file, which is downloaded to the local ASMi-52 using the TFTP or XMODEM protocol. Upon downloading, the new software release becomes active, the former active software turns into backup, and the former backup is erased.

If a failure occurs during downloading or decompression, the new version is erased from the flash and the backup version becomes active. In this case, only one version is left stored in the flash memory. If active software becomes corrupted, you can replace it with the backup one.

Installing a New Software Release via TFTP

➤ **To install a new software release via TFTP:**

1. Display the TFTP menu (*Figure 4-43*) (Main menu > File Utilities S&W & File Transfer > TFTP)

```
                                ASMi-52
TFTP
TFTP status                 (No operation)
TFTP error                  (No error)
1. TFTP IP server           (0.0.0.0)
2. TFTP file name           (asmi52.img)
3. TFTP retry timeout       (15)
4. TFTP total timeout       (60)
5. Save
6. Transfer command
>
ESC - prev. menu ; ! - main menu ; & - exit
```

Figure 4-43. TFTP Menu

2. From the TFTP menu, perform the following steps:
   - Select **TFTP IP Server** and enter the IP address of the TFTP server
   - Select **TFTP File Name** and enter the name of the software file (for example, **asmi52.img**).
   - Select **TFTP Retry Timeout** and specify intervals between connection retries (in seconds).

- Select **TFTP Total Timeout** and specify the TFTP connection timeout (in seconds).
- Select **Save** to save the TFTP configuration.
- Select Transfer Command to start downloading file to ASMi-52.

ASMi-52 automatically erases the backup partition. Once the downloading is completed, ASMi-52 saves the new release as an active partition, the former active partition becomes backup.

Once the downloading is complete, ASMi-52 decompresses the release file, displaying the following message:

```
Final process download. Reset
```

After the decompression, ASMi-52 saves the new release as an active partition, the former active partition becomes backup. Then the unit resets itself. This causes the new software to be loaded into the modem's RAM.

Installing a New Software Release via XMODEM

Notes

- *Installation of the new software releases via XMODEM is not possible over Telnet.*
- *To minimize the software downloading time, it is recommended to configure the CONTROL port to the highest available data rate, see Changing the Control Port Data Rate section above.*

➤ **To install a new software release via XMODEM:**

1. Follow the path: Main menu > File Utilities S&W & File Transfer > XMODEM.

   ASMi-52 responds with the following string:

   ```
   PLEASE OPEN XMODEM APPLICATION.
   For exit press Q(uit)
   ```

   If you press **<Q>**, ASMi-52 aborts the download process and displays **`Download failure. Press Esc to continue.`** message in addition to the previous display.

Note

During the software installation, the TST indicator blinks.

2. Send the ***.img** file to ASMi-52 using the XMODEM protocol of your terminal application.

   Once the downloading is complete, ASMi-52 decompresses the release file, displaying the following message:

   ```
   Final process download. Reset device after 5 seconds
   ```

   After the decompression, ASMi-52 is automatically reset. This causes the new software to be loaded into the modem's RAM.

Displaying the Software Version

You can display the information on the software revision of the local or remote modem. The information includes a description of the active program, which is currently being used by ASMi-52, and also details on the passive software kept for the backup purposes.

➤ **To display the software version:**

1. From the SW Files menu, (File Utilities menu > File System > SW files), select **Local SW Files** to display software revision of the local ASMi-52, or select **Remote SW Files** to display software revision of the remote device.

   The Local or Remote Software Version screen appears (see *Figure 4-44*).

```
SW files

Software active version:        1.00A05
Software active partition:      0
Code size:                      683027
Date:                           17-7-3

Software backup version:        0.00n00
Software backup partition:      1
Code size:                      0
Date:                           0-0-0

Boot version:                   1.20
Boot mng version:               6.00

Press any key to continue...

ESC-prev.menu; !-main menu; &-exit
```

Figure 4-44. Local Software Version Screen

Switching the Software Versions

If an active software becomes corrupted, you can switch it with the backup in the local ASMi-52 units.

➤ **To swap software versions:**

1. Follow the path: File Utilities menu > File System > Swap SW files.

   The Swap SW Files menu appears.

2. From the Swap SW Files menu, select **Swap Local SW Files** to switch files in the local ASMi-52.

   ASMi-52 displays the following message:
   `Request to swap SW files!!! Confirm Y/N`

3. Type **Y** to confirm the file swap.

   ASMi-52 performs the swap and sends the following string:

   `Program Switching`

   Active software becomes backup and vice versa. At this stage, ASMi-52 is automatically reset.

   If you try to switch the software versions when only one version is available, ASMi-52 responds with the following message:

   `Impossible to switch – no other program`

   `Press any key to continue`

4.10 Resetting ASMi-52

ASMi-52 supports four types of reset:

- Reset to the default setting
- SHDSL interface reset
- SHDSL repeater line reset.
- Overall reset

Resetting to Default Settings

You can reset the local or remote ASMi-52 to default settings. Resetting to the factory default does not affect the master clock setting. In addition, you can reset the local ASMi-52 without affecting its management parameters (IP address, mask and default gateway).

➤ **To reset ASMi-52 to the factory default:**

1. Display the Factory Default menu. (Path: Main menu > Configuration > System Configuration > **Factory default**)

   Factory Default menu is displayed (*Figure 4-45*).

```
                              ASMi-52
Factory default
1. Local factory default     ...
2. Remote factory default    ...
3. Local factory default W/O MNG  ...
4. Remote factory default W/O MNG ...
>
ESC - prev. menu ; ! - main menu ; & - exit
```

Figure 4-45. Factory Default Menu

2. From the Factory Default menu, perform one the following steps:
   - Select **Local Factory Default** to reset the local ASMi-52.
   - Select **Remote Factory Default** to reset remote device.
   - Select **Local Factory Default W/O MNG** to reset all parameters, except for IP address, mask, default gateway and manager list of the local ASMi-52.
   - Select **Remote Factory Default W/O MNG** to reset all parameters, except for IP address, mask, default gateway and manager list of the remote ASMi-52.

Note ***Local/Remote Factory Default W/O MNG*** *parameters are available only for the units equipped with the management LAN port.*

   ASMi-52 displays the following message:
   `Request to factory default !!! Confirm Y/N`

3. Type **Y** to confirm the reset.

   ASMi-52 resets all configuration parameters, except for the master clock (and IP values), to their default settings and restarts the system.

Resetting the ASMi-52 Modem

You can reset the SHDSL interface of the modem or repeater, or perform the overall reset of the modem.

➤ **To reset the SHDSL interface or perform the overall device reset:**

1. From the System Configuration menu, select **Reset**.

   The Reset menu appears (see *Figure 4-46*).

2. From the Reset menu, select **Local Reset** to reset the local modem, **Remote Reset** to reset remote device.

   The Local/Remote Reset menu appears (see *Figure 4-47*).

3. From the Local/Remote Reset menu, select **Local Device Reset** to perform the overall reset or select **Local SHDSL Line Reset** to reset the SHDSL interface.

   A confirmation message appears.

4. Type **Y** to confirm the reset.

```
                              ASMi-52
Reset
1. Local reset                          >
2. Remote reset                         >
3. Repeater reset                       >
>
ESC-prev.menu; !-main menu; &-exit; @-scroll
```

Figure 4-46. Reset Menu

```
                              ASMi-52
Local Reset
1. Local device reset
2. Local SHDSL line reset
>
ESC-prev.menu; !-main menu; &-exit; @-scroll
```

Figure 4-47. Local/Remote Reset Menu

Resetting the SHDSL Repeater

You can reset line interface of the SHDSL repeater from the local ASMi-52 via the Reset menu.

➤ **To reset line interface of the SHDSL repeater:**

1. Display the Reset menu. (Path: Main menu > Configuration > System configuration > Reset > **Repeater Reset**)

   The Repeater Reset menu appears (see *Figure 4-48*).

2. From the Repeater Reset menu, select **Repeater Number**.

   The Repeater Number menu appears.

3. From the Repeater Number menu, select repeater that you intend to reset.
4. From the Repeater Reset menu, select **Repeater SHDSL Line Reset** to reset the SHDSL line interface of the repeater.

   A confirmation message appears.
5. Type **Y** to confirm the reset.

```
                              ASMi-52
Repeater Reset
1. Repeater SHDSL line reset...
2. Repeater number               >    (1)
>
ESC-prev.menu; !-main menu; &-exit; @-scroll
```

Figure 4-48. Repeater Reset Menu

4.11 Exiting the Control Session

You can exit the terminal control session at any time by typing **& + Enter** from any management menu.

The software returns to the login screen.

Chapter 5

Configuring a Typical Application

5.1 Overview

This chapter provides detailed instructions for setting up two ASMi-52 modems in a typical application.

Configuration of ASMi-52 is performed via menu-driven embedded software, using a standard ASCII terminal or a PC running a terminal emulation application connected to the rear panel CONTROL port. Alternatively, ASMi-52 can be managed from a Telnet host connected to the 10/100BASE-T port on the rear panel. Read Chapter 4 to familiarize yourself with operation from a terminal.

Application

Two ASMi-52 modems operating opposite each other. One in the central office, the second the customer premises equipment. User traffic is E1 unframed.

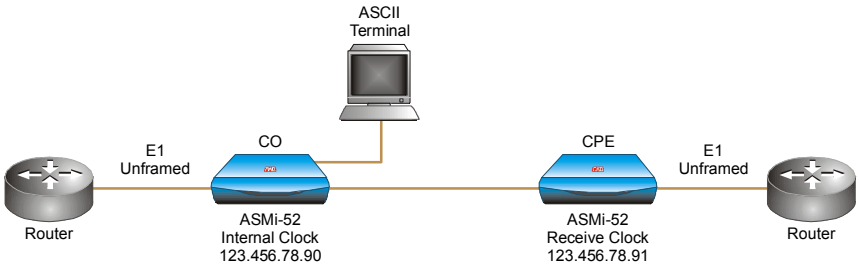

Figure 5-1. Typical ASMi-52 Application

Guidelines for Configuring ASMi-52 Units

Each ASMi-52 unit must be configured individually. This typical application has the following configuration steps:

1. Setting the system: Setting the clock mode and the device Host IP address
2. Setting the line interface: Setting the Wire mode (2W or 4W)
3. Setting the E1 port: Setting the framing mode.

5.2 Configuring the ASMi-52 units

Two ASMi-52 units must be configured for this application. Both units have the same configuration parameters, except for the host IP address and the master clock mode.

➤ **To prepare a control session:**

1. Connect the terminal cable to the CONTROL connector of ASMi-52.
2. Turn the control terminal on.
3. Configure the terminal to the default communication parameters: 9.6 kbps, one start bit, eight data bits, no parity, one stop bit, VT100 emulation.
4. Select the full duplex mode.
5. Turn the terminal echo off.
6. Disable any type of flow control.

   You are now ready to start a control session.

➤ **To enter the user name and password:**

1. Type in your user name and press **<Tab>**.

Note *You can leave the user name field empty (default), the default password is **1234.***

2. Type in your password at the > prompt (up to eight characters).

   ASMi-52 responds to your entry with asterisks.
3. Press **<Enter>**.

   The Main menu is displayed.

Setting the ASMi-52 System

➤ **To configure the master clock.**

1. Display the Master Clock menu (Main menu > Configuration > System configuration > Master Clock)

   The Master Clock menu appears.

```
                              ASMi-52
Master clock (Internal)
Receive
Internal
External
>
ESC-prev.menu; !-main menu; &-exit; @-scroll
```

2. From the Master Clock menu, three clock modes are given **Receive**, **Internal**, or **External**.
   - Set the CO ASMi-52 unit clock to Internal
   - Set the CPE ASMi-52 unit clock to Receive

3. Select **Save** to save the changes.

➤ **To set the device host IP address:**

4. Display the host IP menu (Main menu > Configuration > System configuration > Management > Host IP.

   The host IP screen appears.

5. From the host IP menu, configure the following:
   - CO ASMi-52 – 123.456.78.90
   - CPE ASMi-52 – 123.456.78.91
   - Host IP mask – 255.255.255.1
   - Host default gateway IP address – 255.255.255.2

```
                              ASMi-52
Host IP
Host IP address                    (123.456.78.90)
Host IP mask                       (255.255.255.1)
Host default gateway               (255.255.255.2)
Read community                     (public)
Write community                    (public)
Trap community                     (public)
>
ESC-prev.menu; !-main menu; &-exit; @-scroll
```

6. Press ESC to return to previous menu (Management screen).
7. Save the changes.

Setting the Line Interface

Set the line interface wire mode to 4-wire.

➤ **To set the wire mode:**

1. Display the Configured wire screen (Main menu > Configuration > Physical Ports Configuration > SHDSL Configuration > SHDSL Port Configuration).

```
                              ASMi-52
SHDSL local port configuration
1. Power backoff                                  (Enable)
2. Snext margin                                   (Disable)
3. Current margin                                 (Disable)
4. Asym PSD                                       (Symmetrical)
5. Line prob                                      (Adaptive rate)
6. Configured wire                                (4W)
7. Loop attenuation threshold (dB) [0-127]        (0)
8. SNR margin threshold (dB) [0-15]               (0)
9. Save
>
ESC-prev.menu; !-main menu; &-exit; @-scroll
```

2. Select Configured wire

   The display is refreshed and a new value appears (**4W**).

3. Select **Save** to save the change

4. Reset ASMi-52 in order to activate the change.

Setting the E1 port

➤ **To select E1 framing mode:**

1. Display the Framed Mode screen (Main menu > Configuration > Physical Ports Configuration > E1 Port Configuration menu > Framed Mode)

   The Framed Mode menu appears.

```
                              ASMi-52
Framed mode (Unframed)
1. Unframed
2. G732N
3. G732S transparent
>
ESC-prev.menu; !-main menu; &-exit; @-scroll
```

2. From the Framed Mode menu, select **Unframed** to choose unframed operation.

   The E1 Port Configuration menu appears.

3. Save the changes.

After performing these configuration procedures, the ASMi-52 units are ready to be connected.

Chapter 6

Troubleshooting and Diagnostics

This chapter describes the ASMi-52 diagnostic functions, which include:

- Status indications, alarms, power-up self-test
- Statistics collection
- Diagnostic tests (loopbacks and LEDs test).

6.1 Error Detection

Power-Up Self-Test

ASMi-52 performs a hardware self-test upon turn-on. The self-test sequence checks the critical circuit functions of the modem.

The results of the hardware self-test for the local or remote ASMi-52 are displayed in the System Status and Physical Status Port screens (see *Chapter 4*).

Front Panel LEDs

The status of ASMi-52 is indicated by the ALM, TST and SYNC LED indicators located on the front panel. For the description of LEDs and their functions, refer to *Chapter 3*.

Displaying Alarms

ASMi-52 detects fault conditions and initiates alarms to alert the user. ASMi-52 supports the following alarm types:

- System alarms, relating to the ASMi-52 chassis
- Port alarms, relating to a specific interface (SHDSL or DTE)
- Information messages (warnings)
- Events that trigger alarm activation.

ASMi-52 maintains two separate displays for the system and port alarms. In addition, the modem supports a local log file, holding up to 100 alarms.

An alarm or warning enters simultaneously both the alarms display and the log file, and the ALM LED turns on to indicate the condition. When the fault condition that caused the alarm is cleared, the alarm is removed from the alarm screen, but it

remains in the log file, enabling you to view the alarm history. Events enter only the log file.

Displaying All Alarms

ASMi-52 allows you to display all alarms, irrespective of their origin (system or port).

➤ **To display all alarms:**

1. From the Main menu, select **Monitoring**.

   The Monitoring menu appears (see *Figure 6-1*).

2. From the Monitoring menu, select **Total Alarms**.

   The Total Alarms Screen appears (see *Figure 6-2*).

   The display of the alarms screen includes the source of alarm (local or remote device), name of the alarm, its number, severity (major or minor) and status (always ON), see *Figure 6-2*.

   Once the event that caused the alarm is cleared, the ALM indicator turns off.

3. Press **<Enter>** to refresh the display.

```
                                ASMi-52
Monitoring

1. Total alarms                  >
2. System monitoring             >
3. Physical ports monitoring     []>

>
ESC-prev.menu; !-main menu; &-exit; @-scroll
```

Figure 6-1. Monitoring Menu

```
                                ASMi-52
Total alarms

Source      Name                          Num          Severity     Status
Local 1     PSD NOT COMPATIBLE            16           MINOR        ON
Local 1     CRC ERROR OVER LINE A         21           MINOR        ON
```

Figure 6-2. Total Alarms Screen

Displaying System Alarms

➤ **To display the system alarms:**

1. From the Main menu, select **Monitoring**.
2. From the Monitoring menu, select **System Monitoring**.

   The SystemMonitoring menu appears (see *Figure 6-3*).
3. Select **Device Local Alarms** to display the local device alarms or type **Device Remote Alarms** to display the remote device alarms.

   The Device Alarms screen appears (see *Figure 6-4*).

```
                              ASMi-52
System Monitoring
System local status                          >
System remote status                         >
Device local alarms                          []>
Device remote alarms                         []>
System log file
System clear log file                          ...


>
ESC-prev.menu; !-main menu; &-exit; @-scroll
```

Figure 6-3. System Monitoring Menu

```
                              ASMi-52
Device local alarms

Source    Alarm name          Alarm num    Severity     Status
Local 1   SELF TEST ERROR         1          MAJOR        ON
```

Figure 6-4. Device Alarms Screen

Working With System Log File

ASMi-52 maintains system alarm buffer, which can store up to 100 system alarm messages. The system log file specifies alarm or event name, severity (major or minor), status (ON or OFF), and time elapsed since the last ASMi-52 reset.

➤ **To display the system log file:**

- From the System Monitoring menu (*Figure 6-3*), select **System Log File**.

  The System Log File screen appears.

➤ **To clear the system log file:**

1. From the System Monitoring menu (*Figure 6-3*), select **System Clear Log File** to clear the log file.

   A confirmation message is displayed at the bottom of the screen.

2. Type **Y** and press **<Enter>**.

   All the system log file entries are deleted from the log file.

Displaying Port Alarms

1. Follow the path: Main menu > Monitoring > Physical Port Monitoring > Physical Port Status

   The Physical Port Status menu appears.

2. From the Physical Port Status menu, select:
   - **Physical Port Local Statistics** to display the local port status
   - **Physical Port Remote Statistics** to display the remote port status
   - **Physical Port Repeater Status** to display the SHDSL repeater alarms.

3. From the Physical Port Local/Remote Status menu, select **Port Local/Remote Alarms** to display the local or remote port alarms.

   The Port Alarms screen appears (see *Figure 6-6*).

```
                                    ASMi-52
Physical port local status
1. Port local status
2. Port local alarms
3. Line mask                 (NO_MASK)
4. Port log file
5. Port clear log file
>
ESC-prev.menu; !-main menu; &-exit; @-scroll
```

Figure 6-5. Physical Port Status Menu

```
                                    ASMI 52
Port local alarms

Source      Alarm name                      Alarm num    Severity     Status
Local 1     E1 SIGNAL LOSS                  27           MAJOR        ON
```

Figure 6-6. Port Alarms Screen

Masking Port Alarms

ASMi-52 allows you to mask alarms generated by local and remote devices.

➤ **To mask ASMi-52 alarms:**

- From the Physical Port Local Status menu (*Figure 6-5*), select **Line mask**.

  The Line Mask value changes to Mask. ASMi-52 starts ignoring all alarms generated devices connected to the modem.

Working With Port Log File

ASMi-52 maintains port alarm buffer, which can store up to 100 alarm messages. The port log file specifies alarm or event name, severity (major or minor), status (ON or OFF), and time elapsed since the last ASMi-52 reset.

➤ **To display the log file:**

1. From the Monitoring menu, select **Physical Ports Monitoring.**

   The Physical Ports Monitoring menu appears.

2. Select **Physical Port Local Status** to display the local port status or select **Physical Port Remote Status** to display the remote port status.

   The Physical Port Local/Remote Status menu appears (see *Figure 6-5*).

3. From the Physical Port Local/Remote Status menu, select **Port Log File**.

   The Port Log File screen appears (see *Figure 6-7*).

```
                                ASMI 52
Port log file

Source  Name                 severity          Status              time
1  Local MNGMNT IS DOWN      MAJOR               ON               : 0:0:0
2  Local SYNC LOSS LINE A    MAJOR               ON               : 0:0:1



ESC-prev.menu; !-main menu; &-exit; @-scroll; ?-help              1 user(s)
```

Figure 6-7. Port Log File Screen

➤ **To clear the log file:**

1. From the Physical Port Status menu, select **Port Clear Log File** to clear the log file.

   A confirmation message is displayed at the bottom of the screen.

2. Type **Y** and press **<Enter>**.

   All the log file entries are deleted from the log file.

Table 6-1. ASMi-52 Alarms and Warnings

Number	Terminal Message	Port	Description	Severity
1	SELF TEST ERROR	–	Failure occurred during self-test	Major
2	SOFTWARE DOWNLOAD	–	Software download is in progress	Warning
4	LLB FROM DTE	DTE	Local loopback has been activated by physical connector (units with V.35 DTE interface only)	Warning
5	RLB FROM DTE	DTE	Remote loopback has been activated by physical connector (units with V.35 DTE interface only)	Warning
6	PROP PROT FAIL	SHDSL	FE Management by EOC failed	Warning
8	LAN NOT CONNECTED	DTE	The Ethernet interface is not connected to LAN	Major
9	LOOP ATTN. OVER LINE A	SHDSL	Line A loop attenuation has exceeded the alarm threshold	Minor
10	LOOP ATTN. OVER LINE B	SHDSL	Line B loop attenuation has exceeded the alarm threshold (4-wire units only)	Minor
11	SNR MARGIN OVER LINE A	SHDSL	Line A signal-to-noise margin has exceeded the alarm threshold	Minor
12	SNR MARGIN OVER LINE B	SHDSL	Line B signal-to-noise margin has exceeded the alarm threshold (4-wire units only)	Minor
13	LOSW FAILURE OVER LINE A	SHDSL	Loss of Sync Word is detected on line A	Minor
14	LOSW FAILURE OVER LINE B	SHDSL	Loss of Sync Word is detected on line B (4-wire units only)	Minor
15	DATA RATE NOT COMPATIBLE	DTE	Mismatch in the line rate and data rate. Applicable for the ASMi-52 units with V.35 interface, operating in adaptive rate mode	Major
16	PSD NOT COMPATIBLE	SHDSL	Mismatch between PSD mode selected by the user and PSD mode used by the line	Minor
17	SYNC LOSS LINE A	SHDSL	SHDSL line A is nor synchronized	Major
18	SYNC LOSS LINE B	SHDSL	SHDSL line B is nor synchronized (4-wire units only)	Major
19	MNGNT IS DOWN	SHDSL	The management link between local and remote units is down	Major
21	CRC ERROR OVER LINE A	SHDSL	Excessive CRC-6 errors have been detected on SHDSL line A	Minor
22	CRC ERROR OVER LINE B	SHDSL	Excessive CRC-6 errors have been detected on SHDSL line B (4-wire units only)	Minor
23	NO DTE INTERFACE	DTE	No DTE interface is detected	Major
25	E1 REMOTE FAILURE T1 REMOTE FAILURE	DTE	Red alarm is detected at the remote E1 or T1 port	Major

Table 6-1. ASMi-52 Alarms and Warnings (Cont.)

Number	Terminal Message	Port	Description	Severity
26	E1-TS NOT RATE COMP T1-TS NOT RATE COMP	DTE	Current line rate does not support the number of assigned E1 or T1 timeslots	Major
27	E1 SIGNAL LOSS T1 SIGNAL LOSS	DTE	E1 or T1 loss is detected at the DTE port	Major
28	E1 BPV ERR EXC T1 BPV ERR EXC	DTE	E1 or T1 bipolar violation errors exceed threshold	Minor
29	E1 FRAME SLIP EXC	DTE	E1 frame slips exceed the threshold	Minor
30	E1 EXCECIVE BPV T1 EXCECIVE BPV	DTE	Bipolar violations rate exceeds 1×10^{-6} during the last 1000 seconds	Major
31	E1 CRC-4 EXC	DTE	CRC-4 errors exceed the threshold	Minor
32	E1 EXCESIVE ERR RATIO T1 EXCESIVE ERR RATIO	DTE	The bit error rate of the link exceeds 10^{-3}	Major
33	E1 AIS OCCURED T1 AIS OCCURED	DTE	AIS is detected at the E1 or T1 port	Major
34	E1 AIS AND SYNC LOSS T1 AIS AND SYNC LOSS	DTE	AIS and loss of frame alignment are detected at the E1 or T1 port	Major
35	E1 SYNC LOSS T1 SYNC LOSS	DTE	E1 or T1 loss of frame synchronization occurred	Major
36	E1 CRC MF EXC	DTE	CRC errors detected in the frame synchronization signal exceeded the threshold	Minor
37	E1 REMOTE SYNC LOSS T1 REMOTE SYNC LOSS	DTE	Remote loss of frame synchronization occurred	Major
38	E1 MF SYNC LOSS	DTE	Local loss of frame synchronization	Major
39	E1 MF REMOTE SYNC LOSS	DTE	Remote loss of frame synchronization	Major
40	E1 TS NOT X128 T1 TS NOT X128	DTE	Number of timeslots assigned for the ASMi-52 unit with 4-wire line interface is not n×128	Major
41	E1 TS NOT COMP T1 TS NOT COMP	DTE	Number of timeslots assigned for the local unit does not match the number of timeslots assigned for the remote unit.	Major

Table 6-1. ASMi-52 Alarms and Warnings (Cont.)

Number	Terminal Message	Port	Description	Severity
42	WIRE MODE NOT COMP	SHDSL	Mismatch between line interface types (2/4-wire) between local and remote units	Major
43	SPAN IS NOT FULL	SHDSL	Distance between adjacent repeaters is too long. You can identify the problematic segment by checking the Port Status screen. In the Number of Repeaters line, it displays the last repeater identified by ASMi-52. This means that the distance between the last detected repeater and the next repeater exceeds it maximum range.	Major
44	LOOP ATTN. OVER NETWORK SIDE	SHDSL	Loop attenuation at the network side of the repeater has exceeded the alarm threshold	Minor
45	LOOP ATTN. OVER CUSTOMER SIDE	SHDSL	Loop attenuation at the customer side of the repeater has exceeded the alarm threshold	Minor
46	SNR MARGIN OVER NETWORK SIDE	SHDSL	Signal-to-noise margin at the network side of the repeater has exceeded the alarm threshold	Minor
47	SNR MARGIN OVER CUSTOMER SIDE	SHDSL	Signal-to-noise margin at the customer side of the repeater has exceeded the alarm threshold	Minor
48	LOSW FAILURE OVER NETWORK SIDE	SHDSL	Loss of Sync Word is detected at the network side of the repeater	Minor
49	LOSW FAILURE OVER CUSTOMER SIDE	SHDSL	Loss of Sync Word is detected at the customer side of the repeater	Minor
50	LINE PARAMERS NOT COMP	SHDSL	Modems fail to synchronize due to the configuration parameters mismatch. For example: • The modems operate in the adaptive mode (Line Prob is set to Adaptive Rate) and distance between them exceeds the maximum range. • ASMi-52 with V.35 interface operates opposite remote unit with E1 interface. If the modem V.35 is set to the data rate which is not supported by the remote unit, e.g. 2304 kbps, the units will not synchronize.	Major
51	EXTERNAL TO INTERNAL CLOCK	DTE	Device is in External clock, but clock is not connected	Major

Table 6-2. ASMi-52 Events

Terminal Message	Description
CRC EVENT LINE A	CRC errors are detected on line A
CRC EVENT LINE B	CRC errors are detected on line B
SW DOWNLOAD FAIL	Software download failed
BUFFER OVERFLOW	More than 100 entries registered in the log file
WD RESET FROM GS	Watchdog error from the SHDSL chipset

Table 6-2. ASMi-52 Events (Cont.)

Terminal Message	Description
GS OUT OF SYNC ABORT	SHDSL framer out of sync
GS LOSS OF CARRIER DETECT	SHDSL carrier loss
GS SQ ERROR DETECT	SHDSL signal quality value is more than 22.7 dB
GS CRC ERROR DETECT	More than three SHDSL CRC errors were detected during last second
REP SEGD ERROR DETECT	SEGD error from repeater: sync fail on another part of the span
TRAINING MODE STACK	CPE Training state timeout is exceeded (3 min)
DEVICE PRIMARY CALL FAIL	Primary number dial attempt has failed
DEVICE DIAL CALL FAIL	Dial out call cycle has failed

6.2 Displaying SHDSL Statistics

ASMi-52 has capabilities for collection of the SHDSL performance statistics. The statistics data is collected for the current 15-minute interval or current day. In addition ASMi-52 displays a statistics report for the last 96 intervals or the last seven days, elapsed since the last modem power-up.

Displaying the Current SHDSL Statistics

SHDSL performance statistics for the current 15-minute interval and for the current 24-hour interval.

➤ **To display the current SHDSL statistics:**

1. Follow the path: Main menu > Monitoring > Physical Ports Monitoring > Port Statistics.

   The Physical Port Statistics menu appears (see *Figure 6-8*).

```
                                ASMi-52
Physical Port Statistics
1. SHDSL local port performances ...
2. SHDSL remote port performances ...
3. E1 local port performances ...
4. E1 remote port performances ......
>
ESC-prev.menu; !-main menu; &-exit; @-scroll
```

Figure 6-8. Physical Port Statistics

2. From the Physical Port Statistics, select:
   - **SHDSL Local Port Performances** to display the local unit SHDSL statistics
   - **SHDSL Remote Port Performances** to display the remote unit SHDSL statistics.

   The SHDSL Statistics menu appears (see *Figure 6-9*).

```
                              ASMi-52
SHDSL statistics
1. SHDSL current performances ...
2. SHDSL all intervals performances ...
3. SHDSL current day performances ...
4. SHDSL all days performances ...
5. SHDSL clear performances

>
ESC-prev.menu; !-main menu; &-exit; @-scroll
```

Figure 6-9. SHDSL Statistics Menu

3. From the SHDSL Statistics menu, select:
   - **SHDSL Current Performances** to display the current SHDSL statistics
   - **SHDSL Current Day Performances** to display the current day statistics.

   The SHDSL Performance screen appears (see *Figure 6-10* and *Figure 6-11*).
4. Press **<Enter>** to refresh the display or press **<Esc>** to exit the SHDSL Performance screen.

```
                              ASMi-52
SHDSL current local performance
Port number                    (1)
Current ES                     (0)
Current UAS                    (0)
Current SES                    (0)
Current LOSWS                  (0)
Current CRC anomalies          (0)
Current Timer                  (540 sec)
Cur. noise margin              (2 dB)
Cur. line attenuation          (0 dB)
Cur. receive gain              (0 dB)
Cur. transmit power            (0.0 dBm)
Cur. actual power              (0 dB)
Current Day Interval           (13)
Day Intervals                  (0)

>
ESC-prev.menu; !-main menu; &-exit; @-scroll
```

Figure 6-10. SHDSL Performance Screen

```
                                ASMi-52
SHDSL current day performance
Port number              (1)
24 hour ES               (0)
24 hour UAS              (0)
24 hour SES              (0)
24 hour LOWS             (0)
24 hour CRC              (0)
Cur. Day Timer           (10 hour)
Day Intervals            (10)

ESC-prev.menu; !-main menu; &-exit; @-scroll
```

Figure 6-11. SHDSL current day Performance Screen

Table 6-3. SHDSL Statistics Parameters

Display	Description
Current ES	Number of errored seconds in which one or more CRC (Cyclic Redundancy Check) error events occurred during the current interval. This value is updated every second.
Current UAS	Number of unavailable seconds in which a failed signal occurred during the current interval. This value is updated every second.
Current SES	Number of severely errored seconds in which 832 or more CRC error events occurred during the current interval. This value is updated every second.
Current LOSWS	Number of seconds with loss of sync word during the current interval. This value is updated every second.
Current CRC anomalies	Number of CRC error events recorded since the last time the register was cleared.
Current TIMER	Time in seconds from the beginning of the interval. This value is updated every second.

Displaying the SHDSL Statistics for all Intervals

You can display detailed SHDSL performance statistics for 96 last 15-minute intervals or seven last day(24 hour) intervals elapsed since the last power-up.

➤ **To display the SHDSL statistics for all intervals:**

1. From the SHDSL Statistics menu (see *Figure 6-9*), select **SHDSL All Intervals Performances** to display the SHDSL statistics for 15-minute intervals or select **SHDSL All Days Performances** to display the SHDSL statistics for day intervals.

   The SHDSL All Intervals screen appears (see *Figure 6-10* and *Figure 6-11*).

2. Press any key to return to the SHDSL Statistics menu.

```
                                    ASMi-52
SHDSL all intervals performances ...

       INTERVAL       CRC          LOSWS         ES          SES          UAS
          1            0             0           0           0            0

ESC-prev.menu; !-main menu; &-exit; ?-help; @-scroll
```

Figure 6-12. SHDSL all Intervals Performances

```
                                    ASMi-52
SHDSL all days performances ...

         DAY          CRC          LOSWS         ES          SES         UAS
          1            0             0           0           0           0



ESC-prev.menu; !-main menu; &-exit; ?-help; @-scroll
```

Figure 6-13. SHDSL all Days Performances

Clearing the SHDSL Statistics

➤ **To clear the SHDSL statistics:**

- From the SHDSL Statistics menu (see *Figure 6-9*), select **SHDSL Clear Performances**, and press **<Enter>**.

  All SHDSL statistics data is cleared.

6.3 Displaying E1/T1 Statistics

When ASMi-52 includes G.704 E1 port configured to the G732N framing, the modem has capabilities for collection of the E1 performance diagnostics. Statistics collection depends on the use of the CRC-4 function for E1 and T1 framing mode for T1:

- **CRC-4 Enabled (E1)**, **ESF framing (T1)**

  When the CRC-4 functions is enabled, it is possible to monitor end-to-end the data transmission performance. The error detection is derived from the data payload by performing a cyclic redundancy check (CRC). The resulting CRC checksum is transmitted in addition to the raw data bits. The receiving end recalculates the checksum and compares the results with the received checksum: any difference between the two checksums indicates that one or more bits are contained in the current data block being evaluated.

- **CRC-4 Disabled (E1)**, **SF framing (T1)**

  When the CRC-4 option is disabled, ASMi-52 does not support the capabilities listed above. However, the modem is capable of providing statistics of the bipolar violations.

Note

- *For the details on enabling the CRC-4 function, refer to Enabling CRC-4 Code Generation in Chapter 4.*
- *For the details on configuring T1 framing, refer to Configuring T1 Interface in Chapter 4.*

Displaying the Current E1/T1 Statistics

➤ **To display the current E1 statistics:**

1. From the Physical Port Statistics (*Figure 6-8*), select **E1/T1 Local Port Performances** to display the local unit E1/T1 statistics or select **E1/T1 Remote Port Performances** to display the remote unit E1/T1 statistics.

   The E1/T1 Statistics menu appears (see *Figure 6-14*).

2. From the E1/T1 Statistics menu, select **E1/T1 Current Performances** to display the current E1 statistics or select **E1/T1 Current Day Performances** to display the current day statistics.

   The E1/T1 Performance screen appears (see *Figure 6-15*, *Figure 6-16* and *Figure 6-17*).

3. Press any key to exit the E1/T1 Performance screen.

```
                              ASMi-52
E1 statistics

1. E1 current performances ...
2. E1 all intervals performances ...
3. E1 current day performances ...
4. E1 clear performances
>
ESC-prev.menu; !-main menu; &-exit; @-scroll
```

Figure 6-14. E1 Statistics Menu

```
                              ASMi-52
E1 current performances

Current ES              (0)
Current UAS             (0)
Current SES             (0)
Current BES             (1)
Current LOFC            (0)
Current CSS             (0)
CRC error events        (0)
CRC avg error events    (0)
Current TIMER           (72)

ESC-prev.menu; !-main menu; &-exit; @-scroll
```

Figure 6-15. E1 Current Performances Screen, CRC-4 Enabled

```
                              ASMi-52
E1 current day performance
Current ES                  (0)
Current UAS                 (0)
Current SES                 (0)
Current BES                 (1)
Current LOFC                (0)
Current CSS                 (0)
24 hour degrade min         (0)
24 hour last degrade min    (0)
24 intervals                (2)

ESC-prev.menu; !-main menu; &-exit; @-scroll
```

Figure 6-16. E1 Current Day Current Performances Screen, CRC-4 Enabled

If the CRC-4 is disabled, a typical E1 Current Performance screen will include only BPV statistics, as shown in *Figure 6-17*.

```
                              ASMi-52
E1 current performances

BPV last minute      (0)
BPV max minute       (0)


ESC-prev.menu; !-main menu; &-exit; @-scroll
```

Figure 6-17. Local/Remote E1 Performance Screen, CRC-4 Disabled

Table 6-4. E1 Statistics Parameters

Display	Description	Range	
		15 min	24 hour
CRC errors	Number of CRC error events recorded since the last time the register was cleared.	–	–
CRC avrg errors	The average number of CRC events per second. This value is updated every second.	–	–
Current ES	Number of errored seconds in which one or more CRC (Cyclic Redundancy Check) error events occurred during the current interval. This value is updated every second for 15-minute interval or every 15 minute for 24-hour interval.	0–900	0–65535
Current SES	Number of severely errored seconds in which 832 or more CRC error events occurred during the current interval. This value is updated every second for 15-minute interval or every 15 min. for 24-hour interval.	0–900	0–65535

Table 6-4. E1 Statistics Parameters (Cont.)

Display	Description	Range	
		15 min	24 hour
Current UAS	Number of unavailable seconds in which a failed signal occurred during the current interval. This value is updated every second for 15-minute interval or every 15 min. for 24-hour interval.	0–900	0–65535
Current BES	Number bursty errored seconds, in which 2 to 831 CRC error events occurred during the current interval. This value is updated every second.	0–900	0–65535
Current LOFC	Number of loss of frame alignment events measured during the current interval. This value is updated every second for 15-minute interval or every 15 min. for 24-hour interval.	0–255	0–255
Current CSS	Number of seconds with one or more controlled slip events measured during the current interval. This value is updated every second for 15-minute interval or every 15 min. for 24-hour interval.	0–255	0–255
24 hour degrade minute	Total number of degraded minutes in the current 24-hour interval. A degraded minute is a minute in which the BER exceeded 1×10^{-6}. This value is updated every minute.	–	0–1440
24 hour last degrade minute	Total number of degraded minutes in the last 24-hour interval. This value is updated every 24 hours.	–	0–1440
Current DM	Number of degraded minutes in which the BER exceeded 1×10^{-6}. This value is updated every minute for 15-minute interval or every 24 hours. for 24-hour interval.	0–1440	0–1440
BPV last minute	Number of bipolar violation events detected in the last minute. This value is updated every minute.	0–1000	0–1000
BPV max minute	Number of bipolar violation events detected in the worst minute since the last resetting of the BPV counter. This value is updated every minute.	0–1000	0–1000
Current TIMER	Time in seconds from the beginning of the interval. This value is updated every second. For 24-hour interval – number of 15 minutes intervals the device has been working after power up	0–900	0–96

Displaying E1 Statistics for all Intervals

You can display detailed E1 performance statistics for 96 last 15-minute intervals elapsed since the last power-up.

➤ **To display E1 statistics for all intervals:**

1. From the E1 Statistics menu, select **E1 All Intervals Performances** to display the E1 statistics for all 15-minute intervals.

   The E1 All Intervals Performances screen appears (see *Figure 6-18*).

2. Press any key to exit the E1 All Intervals Performances screen.

```
                                    ASMi-52
E1 all intervals performances ...

 INTERVAL      ES        SES        UAS        BES       LOFC       CSS       DM
    1           0         0          0          0         0          0         0


ESC-prev.menu; !-main menu; &-exit; @-scroll; ?-help
```

Figure 6-18. E1 All Intervals Performances

Clearing the E1 Statistics

➤ **To clear the E1 statistics:**

- From the E1 Statistics menu (see *Figure 6-9*), select **E1 Clear Performances**.

  All E1 statistics data is cleared.

6.4 Performing the Diagnostic Tests

The user-controlled test functions of ASMi-52 consists of the loopback tests and LEDs test. The purpose of these tests is to determine the source of a break in the data flow.

Note

- *Both local and remote* ASMi-52 *units must be configured and synchronized properly to allow remote loopback activation.*
- *Only one loopback can be activated at a time, either on the local or remote unit.*

Running Loopback Tests

ASMi-52 supports the local and remote loopbacks as per ITU V.54, by using the following methods:

- From the supervisory terminal.
- Via corresponding pins of the synchronous interface, for the ASMi-52 with V.35 interface and RS-530 interfaces only.

Running the Local Loopback

The local loopback (LLB) checks the performance of the local ASMi-52 modem, the local DTE and connection between them (see *Figure 6-19*). The LLB can be performed separately on the local and remote modems.

ASMi-52 allows you to set the loopback timeout causing the LLB to deactivate automatically after the desired period of time.

Note *Timeout set to 0 (zero) is forever. Avoid setting timeout to 0 as local control is lost during LLB*

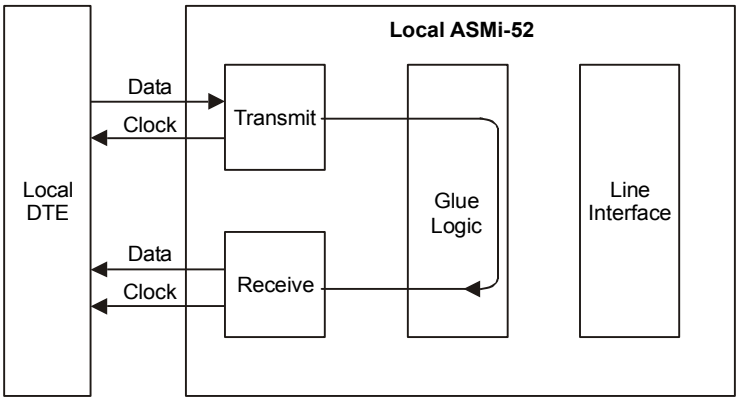

Figure 6-19. Local Loopback

➤ **To run the local loopback:**

1. From the Main menu, select **Diagnostics**.

   The Diagnostics menu is displayed (see *Figure 6-20*).

2. From the Diagnostics menu, select:
   - **Local Test** to run the LLB on the local ASMi-52
   - **Remote Test** to run the LLB on the remote ASMi-52.

   The Local/Remote Test menu appears (see *Figure 6-21*).

3. Select **LLB**.

   The LLB value in parenthesis changes to ON. Also, an additional parameter, *Loop Timeout*, is displayed for the local ASMi-52.

4. Select **Loop Timeout,** if you want to set loopback timeout (in minutes)**.**

   The Loop Timeout value changes.

Note *Avoid setting timeout to 0 as local control is lost during LLB. 0=Forever*

5. Once you selected the loopback timeout, select **Save** to activate the LLB.

   The LLB is initiated. The TST indicator lights up and the ASMi-52 units lose synchronization.

```
                              ASMi-52
Diagnostics
1. Local Test                    >
2. Remote Test                   >
3. Repeater Test                 >
>

ESC-previous menu ; !-main menu ; &-exit terminal
```

Figure 6-20. Diagnostics Menu

```
                                ASMi-52

Local Test or Remote Test

LLB from DTE: OFF

RLB from DTE: OFF

1. LLB (ON)
2. Loop Timeout (min)(0-4095)      ...(5)
3. LEDs test
4. Clear all
5. Save

>

ESC-previous menu ; !-main menu ; &-exit; @-scroll
```

Figure 6-21. Local/Remote Test Menu

Running the Remote Loopback

The remote loopback (RLB) checks the performance of both the local and remote ASMi-52 modems, and the lines connecting them (see *Figure 6-22*).

ASMi-52 allows you to set the loopback timeout causing the RLB to deactivate automatically after the desired period of time.

Note *RLB cannot be initiated from a CPE unit if the CO operates with an external clock, and is configured to one of the following data rates:*
2-wire: 2112 kbps, 2176 kbps, or 2240 kbps
4-wire: 4224 kbps, 4352 kbps, or 4480 kbps

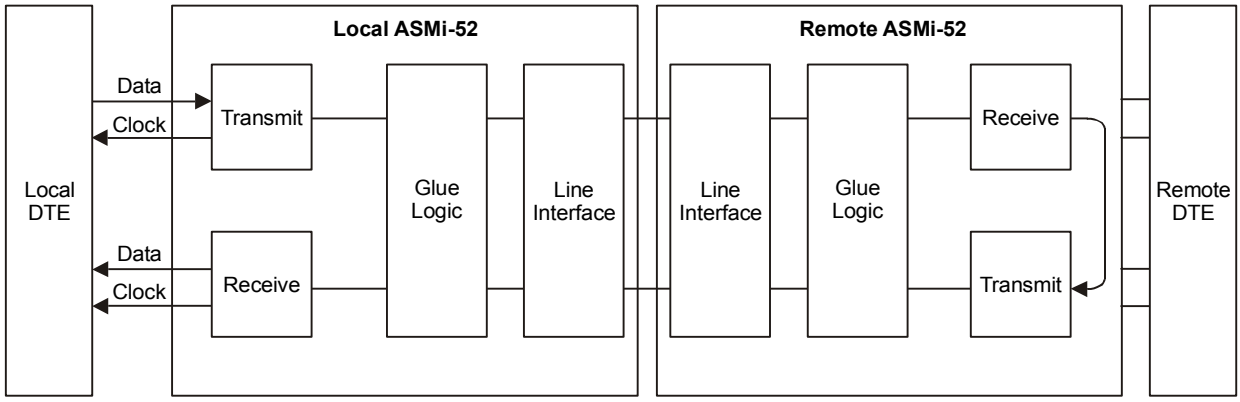

Figure 6-22. Remote Loopback

➤ **To activate the remote loopback:**

1. From the Diagnostics menu (see *Figure 6-20*), select **Local Test** to run the RLB on the local ASMi-52, or select **Remote Test** to run the RLB on the remote ASMi-52.

   The Local/Remote Test menu is displayed (see *Figure 6-21*).

2. Select **RLB**.

   The RLB value in parenthesis changes to ON. Also, an additional parameter, *Loop Timeout*, is displayed for the local ASMi-52.

3. Select **Loop Timeout,** if you want to set loopback timeout (in minutes)**.**

   The Loop Timeout value changes.

Note *Loop timeout = 0 is forever!*

4. Once you selected the loopback timeout, select **Save** to activate the RLB.

   The RLB is initiated. The TST indicators light up on both local and remote units.

Running Remote Loopback at a Repeater

Remote loopback can also be run at an SHDSL repeater installed in the line. The RLB is activated from the CO unit only. The RLB checks performance the repeater at which it is activated, all preceding repeaters, the local ASMi-52 and lines connecting them (see *Figure 6-23*).

➤ **To activate the remote loopback at SHDSL repeater:**

1. From the Diagnostics menu, select **Repeater Test**.

   The Repeater Test menu appears (see *Figure 6-24*).

2. From the Repeater Test menu, select **Repeater Number** and choose repeater at which you intend to activate the RLB Network.

3. From the Repeater Test menu, select **RLB Network**.

   The RLB Network value in parenthesis changes to ON. Also, an additional parameter, *Loop Timeout*, is displayed.

4. Once you selected the loopback timeout, select **Save** to activate the RLB Network.

   The RLB at the repeater is initiated.

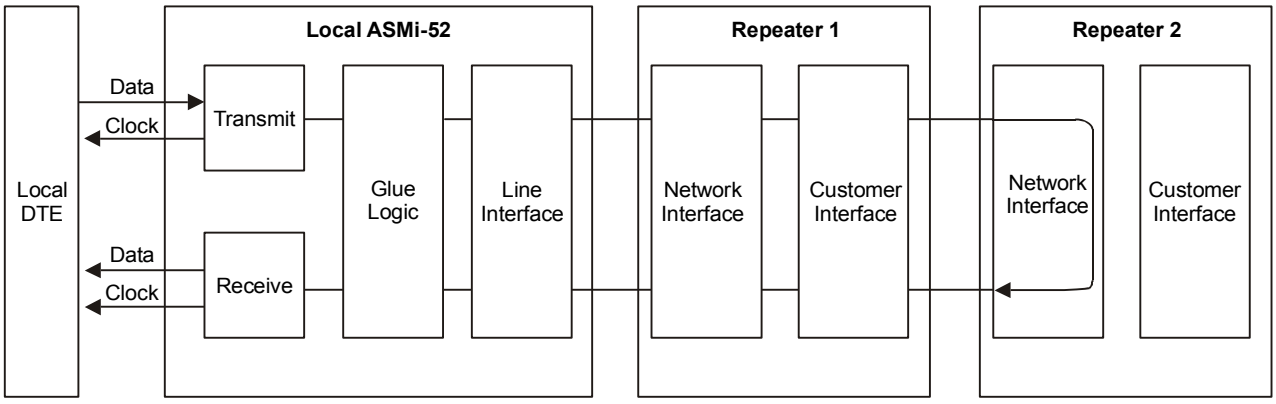

Figure 6-23. Remote Digital Loopback at SHDSL Repeater

```
                              ASMi-52

Repeater Test

1. RLB Network                                (ON)
2. Loop Timeout(min)[0 - 4095]                   ... (5)
3. Repeater number                           > (1)
4. Save

>

ESC-previous menu ; !-main menu ; &-exit
```

Figure 6-24. Repeater Test Menu

Deactivating the Loopbacks

➤ **To deactivate a running loopback:**

- From the Local or Remote Test menu, type the number corresponding to the loopback in progress to change its value from ON to OFF and choose **Save**.

  The TST indicator turns off.

➤ **To deactivate multiple loopbacks:**

- From the Local or Remote Test menu, select **Clear All**.

  The TST indicator turns off.

Running the LEDs Test

The user can perform the front-panel LED test to verify that the local unit indicators are functioning properly.

➤ **To run the LEDs test:**

1. From the Diagnostics menu (see *Figure 6-20*), select **Local Test** to run the LEDs test on the local ASMi-52.

   The Local Test menu is displayed (see *Figure 6-21*).

2. Select **LEDs Test**.

   All the front-panel LED indicators light up for two seconds.

6.5 Technical Support

Technical Support for this product can be obtained from the local distributor from whom it was purchased.

For further information, please contact the RAD distributor nearest you or one of RAD's offices worldwide.

Appendix A
Interface Connector Specifications

A.1 DTE Interface Connectors

V.35, X.21 and RS-530 Interface Connectors

The V.35 interface of the ASMi-52 modem terminates in a 34-pin female connector. The X.21 interface terminates in a 15-pin, D-type female connector. The RS-530 interface terminates in 25-pin, D-type female connector. *Table A-1* lists the pin assignment of the V.35, X.21 and RS-530 interface connectors.

Table A-1. V.35, X.21 and RS-530 Connector Pinouts

Signal Function	V.35 34-Pin		RS-530 DB-25		X.21 DB-15		Description
	Pin	Circuit	Pin	Circuit	Pin	Circuit (Function)	
Protective Ground	A	Frame 101	1		1	---- (Shield)	Chassis Ground. It may be isolated from Signal Ground.
Signal Ground	B	Signal 102 GND	7	AB	8	---- (GND)	Common signal and DC power supply ground.
Transmitted Data	P S	TD(A) 103 TD(B) 103	2 14	BA(A) BA(B)	2 9	T(A) T(B) (Transmit)	Serial digital data from DTE. In sync applications, the data translations must occur on the rising edge of the transmit clock.
Received Data	R T	RD(A) 104 RD(B) 104	3 16	BB(A) BB(B)	4 11	R(A) R(B) (Receive)	Serial output from the modem receiver. In sync applications, the data translations occur on the rising edge of the clock.
Request to Send	C	RTS 105	4 19	CA(A) CA(B)	3 10	C(A) C(B) (Control)	A positive level to ASMi-52 when data transmission is desired.
Clear to Send	D	CTS 106	5 13	CB(A) CB(B)			A positive level from ASMi-52 with delay, after receipt of Request to Send, and when ASMi-52 is ready to transmit.

Table A-1. V.35, X.21 and RS-530 Connector Pinouts (Cont.)

Signal Function	V.35		RS-530		X.21		Description
	34-Pin		DB-25		DB-15		
	Pin	Circuit	Pin	Circuit	Pin	Circuit (Function)	
Data Set Ready	E	DSR 107	6 22	CC(A) CC(B)			A positive level from ASMi-52 when power is on, and ASMi-52 is (a) not in DIGITAL LOOP mode, or (b) has not received a REMOTE LOOPBACK signal from the remote unit.
Data Terminal Ready	H	DTR 108	20 23	CD(A) CD(B)			Not used
Carrier Detect	F	DCD 109	8 10	CF(A) CF(B)	5 12	I(A) I(B) (Indication)	A positive level from ASMi-52, except when a loss of the received signal is detected or when Data Set Ready is negative.
External Transmit Clock	U W	SCTE(A) 113 SCTE(B) 113	24 11	DA(A) DA(B)	7 14	(A) (B)	A serial data rate clock input from the data source. Positive clock translations must correspond to data transmissions.
Transmit Clock	Y a	SCT(A) 114 SCT(B) 114	15 12	DB(A) DB(B)	6 13	S(A) S(B) (Signal Timing)	A transmit data rate clock for use by an external data source. Positive clock translations correspond to data translations.
Receive Clock	V X	SCR(A) 115 SCR(B) 115	17 9	DD(A) DD(B)			A receive data rate clock output used by an external data sink. Positive clock translations correspond to data translations.
Local Analog Loop	L and j		18	LL			A control signal input, which, when on, sets ASMi-52 into Local Analog Loopback (V.54 Loop 3).
Remote Digital Loop	N and h		21	RL			A control signal input which, when on, commands ASMi-52 to send a remote Loopback command (V.54 Loop 2) to the remote ASMi-52.
Test Indicator	n and k		25	TM			A Control Signal output from ASMi-52; positive during any test mode.

E1 and T1 Interface Connector

The balanced E1 and T1 interfaces terminate in RJ-45 connector. *Table A-2* lists the balanced connector pin assignment.

Table A-2. E1/T1 Connector Pinout

Pin	Function
1, 2	Transmit (output)
4, 5	Receive (input)
7	CPU ID for unbalanced interface detection
8	Earth GND

Ethernet Connector

Table A-3. Ethernet Connector Pinout

Pin	Function
1	Tx+
2	Tx–
3	Rx+
4, 5	–
6	Rx–
7, 8	–

A.2 CONTROL Connector

The control terminal interface terminates in a V.24/RS-232 9-pin D-type female connector which can be configured as DCE or DTE (see the *Selecting the Control Port Interface* section in Chapter 4). *Table A-4* lists the CONTROL connector pin assignments. *Table A-5* describes the control signal direction.

Table A-4. CONTROL Connector Pinout

Pin	Function
1	Data Carrier Detect (DCD)
2	Receive Data (RD)
3	Transmit Data (TD)
4	Data Terminal Ready (DTR)
5	Ground (GND)
6	Data Set Ready (DSR)
7	Request To Send (RTS)
8	Clear To Send (CTS)
9	Ring Indicator (RI)

Table A-5. CONTROL Connector Signal Direction

Control Signal	Interface Type	
	DCE	DTE
CTS	Out	Not Used
DCD	Out	Out
DSR	Out	Out
DTR	In	In
RI	Not Used	In
RTS	In	In

Note

When connected and turned on, the terminal sets the DTR line ON (active) to gain control over ASMi-52 and starts a configuration or monitoring session.

When connecting a dial-out modem to the CONTROL port for the alarm reporting, a cross cable must be used. *Table A-6* pinout of a typical cross cable with two male DB-9 connectors.

Table A-6. Cross Cable Pinout

DB-9 Pin	DB-9 Pin
2	3
3	2
4	6
5	5
6	4
7	8
8	7

A.3 Alarm Relay Connector

The ASMi-52 alarm relay terminates in a 9-pin female connector, designated ALARM. *Figure A-1* lists the pinout of the ALARM connector. *Figure A-2* shows the pin functions. The relay positions are shown in the Alarm Active state.

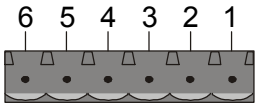

Figure A-1. ALARM Connector Pinout

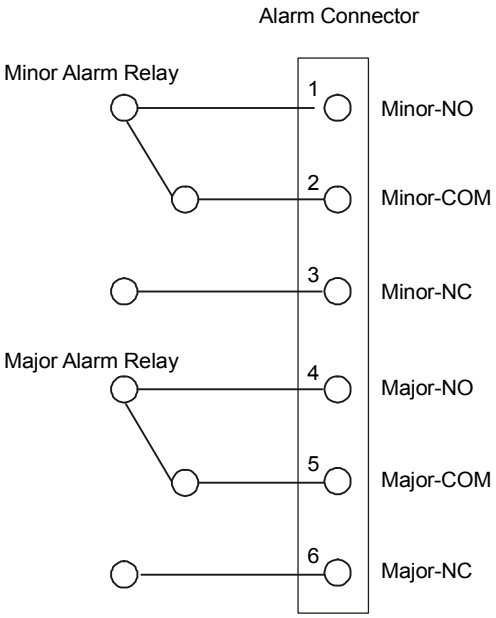

Figure A-2. ALARM Pin Functions

Appendix B
IR-IP Interface Module

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B.1 Introduction

Overview

IR-IP is a high-performance, miniature IP router based on RAD's unique IP router chip, the ChipRouter. IR-IP has a 10BaseT (UTP) interface and complies with IEEE 802.3. The router interface operates in either half-duplex or full-duplex mode.

IR-IP filters the traffic, in accordance with the IP address of each packet, and forwards only packets with foreign addresses through the WAN link. IP packets received from the link are automatically forwarded to the LAN connected to the local Ethernet interface if the IP net matches.

IR-IP includes hardware filters which handle all filtering operations at wire speed from both LAN-to-WAN and WAN-to-LAN, without dropping a single packet. Filtering and forwarding are performed at the maximum rate of 35,000 and 30,000 frames per second (wire speed), respectively. The buffer can hold 256 frames of maximum size of 1534 bytes and a throughput latency of one frame.

ASMi-52 equipped with IR-IP interface module can be used as a Frame Relay Access Device (FRAD) with an integral IP router. RFC 1490 is supported for a single DLCI on the WAN link. Detection of the DLCI and the maintenance protocol is performed automatically. This allows the IR-IP to be used as the termination unit of IP services over Frame Relay at the customer premises, opposite a Frame Relay switch in the backbone.

Alternatively, Point-to-Point Protocol (PPP) can be run on the WAN link with automatic negotiation on power-up, as well as support for PAP and CHAP authentication. With this feature, IR-IP can operate opposite any PPP compliant access server or backbone router.

IR-IP supports HDLC-like framing, which is especially important for broadcast and multicast applications where bandwidth overhead is critical.

IR-IP supports IP multicast at wire speed, making it suitable for any multicast environment including high speed downstream environments, such as satellite and xDSL. Users on the LAN who register with IR-IP for an IP multicast group using the IGMP protocol filter IP multicast packets at wire speed.

Management and advanced configuration are performed via Telnet.

Application

Figure B-1 shows a typical application of the ASMi-52 unit equipped with the IR-IP interface module.

Figure B-1. Typical Application of the ASMi-52 Unit with IR-IP

B.2 Technical Specifications

Router	*Local IP Net Capacity*	Supports up to 256 hosts on the local LAN IP net
	Filtering Rate	35,000 packets per second IR-IP:technical specifications
	Forwarding Rate	30,000 packets per second
	Buffer	256 frames (maximum size – 1534 bytes)
	Delay	1 frame
	Configuration	Telnet, through the 10BaseT interface
LAN	*Standard*	Conforms to IEEE 802.3
	Data Rate	10 Mbps (20 Mbps for 10BaseT in full duplex mode)
	Interface Type	10BaseT for use on UTP and STP media, terminated in RJ-45 shielded 8-pin connector
	Operation Mode	Full duplex or half duplex user-selectable
WAN	*Protocols*	• PPP (PAP/CHAP) • Frame Relay (RFC 1490) • HDLC-like framing

B.3 Physical Description

Figure B-2 shows the rear panels of ASMi-52 with the IR-IP interface module.

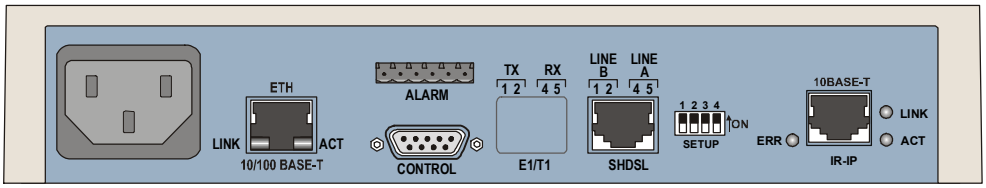

Figure B-2. IR-IP Ethernet Router

Table B-1 provides the pinout of the 10BaseT RJ-45 connector.

Table B-1. RJ-45 Pinout

Pin	Name	Function
1	TD (+)	Transmit data positive
2	TD (-)	Transmit data negative
3	RD (+)	Receive data positive
6	RD (-)	Receive data negative

IR-IP DIP Switch

IR-IP interface module contains a four-section DIP switch, used to configure the basic operating parameters of the IP router. The switch is located on the ASMi-52 rear panel as shown in *Figure B-2*. *Table B-2* lists the DIP switch functions.

Table B-2. IR-IP DIP Switch Functions

No	Function	Values	Default Setting
1	Enables IR-IP to learn its IP	**ON** – IP address learning is enabled	
		OFF – IP address learning is disabled	OFF
	Note: *For details*, see *Assigning the Router LAN Interface Address on page B-8*.		
2	Selects the WAN protocol	**ON** – PPP protocol	
		OFF – Frame Relay protocol	OFF
3	Selects the LAN mode	**ON** – Full duplex operation	
		OFF – Half duplex operation	OFF
4	Controls the remote WAN test loopback, which returns packets received from the WAN back toward the WAN	**ON** – The test loopback is activated	
		OFF – The test loopback is disabled	OFF

Note

The switch can perform additional control functions, which are described below in this appendix.

IR-IP LEDs

IR-IP contains three LEDs, which indicate the module activity. *Table B-3* explains the functions of the IR-IP interface indicators.

Table B-3. IR-IP Interface Indicators

LED Name	Function	Color
LINK	Lights when the Ethernet interface is connected to an active LAN	Green
ACT	Flashes when transmit and/or receive activity is present on the Ethernet interface	Yellow
ERR	Indicates erroneous events, such as collisions, buffer overflows, etc. Also provides additional indications, described below in this section	Red

Normal Indications

The IP router card can start normal service only after it has been configured for operation in the user's network. To simplify the configuration procedure, when an unconfigured IP router card is powered on, it enters the configuration mode.

Power-Up Indications for Unconfigured IP Router Card

LINK indicator Lights steadily after power up when connected to an active station (10BaseT only).

ERR indicator Lights steadily for 12 to 15 seconds, until the card completes software decompression.
After this interval, the ERR indicator starts flashing rapidly (about 3 times per second), to indicate that the card is in the configuration mode.
Configuration instructions are described further in the appendix.

Power-Up Indications for Configured IP Router Card

LINK indicator Lights steadily after power up when connected to an active station (10BaseT only).

ERR indicator After software decompression, turns off.

Indications during Normal Service

During normal service, the LINK indicator lights steadily, indicating LAN integrity. The ACT indicator flashes in accordance with the Ethernet interface traffic.

The ERR indicator is normally off, however it may light momentarily from time to time, to indicate an occasional buffer overflow. If the ERR indicator lights often, the IP router configuration may have to be changed, e.g., it may need more main link bandwidth.

B.4 IR-IP Management Subsystem

The IR-IP interface module management subsystem supports the following functions:

- Preliminary configuration
- Configuration of management access parameters
- Advanced configuration of IR-IP parameters
- Collection and display of statistical performance data
- Maintenance functions, which include:
  - Software downloading
  - Resetting of various subsystems
  - Display of error log
  - Ping utility, for checking IP connectivity.

The management subsystem of the IR-IP interface module is a separate, independent entity, and therefore it cannot be managed through the ASMi-52 management subsystem.

The communication with the IR-IP management subsystem is made through the local LAN interface connector of the IR-IP module, designated 10BASE-T, using the Telnet protocol. Passwords can be used to prevent unauthorized access.

Accessing the IR-IP Management Subsystem

The IR-IP interface module must be configured in accordance with the specific requirements of the user's application before it can be used in the user's network. As a result, it is not possible to supply default parameters to enable IR-IP to start service without any preliminary configuration.

Therefore, to enable the user to establish Telnet communication and configure IR-IP, IR-IP is delivered with a factory-default set of parameters. The factory-default parameters are automatically used:

- Before the IP router is configured by the user, e.g., when a new ASMi-52 with IR-IP interface module is put into operation
- After the user's configuration parameters have been erased.

When the factory-default parameters are used, the ERR indicator located on the ASMi-52 rear panel, near the IR-IP Ethernet interface connector flashes rapidly (about three times per second).

Note *The flashing of the ERR indicator also serves as a warning to the user that the IR-IP WAN interface does not send, nor does it receive packets, and therefore IR-IP can be accessed only from the LAN.*

After configuring IR-IP, it starts normal operation and routes the traffic in accordance with the user-selected configuration parameters.

To change the parameters of an already-configured IR-IP, establish communication from a Telnet host using the assigned IP address.

Default IP Communication Parameters

The factory-default IP communication parameters of the interface module are:

- The default IP address of the IR-IP Ethernet port is 192.168.205.1, and the default IP subnet mask is 255.255.255.252.
- The port will accept IP communication only from the IP address 192.168.205.2. Therefore, as long as the factory defaults are in effect, you must assign this address to the Telnet host used to configure IR-IP.

Using the IP learning mechanism, as explained below you can change the default parameters.

Note *In the default configuration, the IR-IP WAN interface is disabled. In order to enable the WAN interface, you have to modify the Ethernet port address or the IP subnet mask.*

B.5 Performing Preliminary Configuration

The software necessary for performing all the management and configuration functions is stored in the IR-IP interface module, and therefore you only need a regular Telnet host to perform all the activities described in this appendix.
A Telnet host is any computer, e.g., an IBM PC or compatible that fulfills the following minimum requirements:

- A standard 10BaseT Ethernet interface
- A TCP/IP protocol stack, and therefore is capable of supporting IP communication through the Ethernet interface
- Telnet client software
- A ping utility.

Outline of Preliminary Configuration

➤ **To perform the preliminary configuration procedure:**

1. Connect the Telnet host to the IR-IP interface module.
2. Configure the Telnet host to enable communication with the IR-IP interface module using the default IP parameters.
3. Establish communication with IR-IP and assign the prescribed IP address to its LAN interface.
4. Establish again communication with IR-IP and continue the preliminary configuration in accordance with the *Quick Setup* section below.

Connecting the Telnet Host

Before starting the management and configuration activities, it is necessary to establish IP communication between your Telnet host and the IR-IP interface module. For this purpose, it is necessary to provide a communication path.

Because of the method used to assign an IP address to IR-IP Ethernet port, it is recommended to connect the Telnet host directly to the IP router 10BASE-T connector. This is made by connecting an Ethernet cross cable between the Ethernet connector of the Telnet host and the IP router connector.

However, you may also connect through a common LAN: in this case, connect your Telnet host and IR-IP to Ethernet hub ports using straight cables.

Preliminary Telnet Host Configuration

You can use the IP learning mechanism to configure the IP communication parameters of the IR-IP LAN interface. In this case, skip to the *Assigning the Router LAN Interface Address* section below.

If you prefer to use the factory-default parameters to establish IP communication between your Telnet host and IR-IP, configure the Telnet host as follows:

1. Temporarily configure the host IP address as 192.168.205.2.
2. The initial destination IP address to be used by the host is 192.168.205.1.

Note *The first step in the preliminary configuration process is to assign the desired IP address to the LAN interface of the IR-IP interface module.*
After an IP address is assigned and saved, you must change the destination IP address of the Telnet host to the new address, otherwise it is not possible to continue the configuration process. At the same time, you can also change the temporary IP address assigned to the host (192.168.205.2) back to its permanent address.

Assigning the Router LAN Interface Address

The IP address of the IR-IP LAN interface must be configured as part of the preliminary configuration process. To simplify this process, IR-IP includes a simple and convenient IP address learning mechanism.

The IP address can be configured and changed at any time, even after the complete IR-IP configuration process has been performed, because it does not affect other configuration parameters. Moreover, the IP subnet mask is automatically adapted to the new IP address.

IP Learning Mechanism

To simplify the configuration process, IR-IP has a special mechanism for configuring the IP address of its LAN interface. Setting section 1, called IP address learning, of the IR-IP DIP switch (see *Table B-2*) to ON enables this mechanism.

The IP learning mechanism enables IR-IP to learn its LAN interface IP address by receiving frames sent by a ***ping*** utility to the prescribed LAN IP address.

Note *To use the IP learning mechanism, you do not need to know the current address of IR-IP LAN interface, but only the prescribed IP address.*

The IP address is actually retrieved from the ARP frames sent during pinging to locate the ***ping*** destination, not from the ***ping*** frames.

To ensure that the process is correctly performed, it is recommended to check the contents of the ARP table before starting the ***ping*** utility, to make sure that it does not contain the address to be assigned to the IP router LAN interface.

➤ **To view and edit the ARP table contents:**

If the Telnet host you are using runs under Microsoft Inc. Windows™ 95, 98 or NT, use the following procedure to view and edit the ARP table contents:

1. Display the table using the **`arp -a`** command.
2. If the table includes the intended IP address, remove it from the table using the **`arp -d`** command.

If for some reason the IP learning process does not succeed, before repeating it make sure to remove the IP address from the table.

Assigning a LAN IP Address to a New IR-IP

The following procedure enables you to configure the LAN IP address of a new IR-IP router, i.e., a router using the default parameters (see the *Accessing the IR-IP Management Subsystem* section above).

If ASMi-52 is already operating, skip Step 2 in the following procedure.

➤ **To configure the IP router LAN address:**

1. Make sure the preparations described above have been completed, including the configuration of the ***ping*** utility.
2. Turn ASMi-52 on and monitor the IP router indicators:
   - The LINK indicator turns on
   - The ERR indicator lights steadily for approx. 15 seconds, and then starts flashing at a rapid rate (about three times per second).

     If the ERR indicator turns off, skip to the *What to Do If ...* section below.
3. Set section 1 of IR-IP DIP switch to ON.

   The ERR indicator starts flashing faster (approximately four times a second).
4. Send a ***ping*** to the new address to be used by IR-IP. A confirmation should be received after the third ***ping***: after the confirmation, the flashing will slow down to approximately twice a second.

If your host does not begin to receive ***ping*** replies after three unsuccessful attempts, skip to the *What to Do If ...* section below.

5. Return section 1 of the IR-IP DIP switch to the OFF position.

   The ERR indicator must turn off.

At this stage, the communication with IR-IP router is lost, because its IP address has been changed. Therefore, you must reconfigure the destination IP address of the Telnet host. If you wish, you may also change the temporary IP address assigned to the host (192.168.205.2) back to its permanent address.

Changing the LAN IP Address of a Configured IR-IP

The LAN IP address of an already-configured IR-IP can be changed while it operates. This means it is not necessary to turn ASMi-52 off before starting the configuration procedure. Note however that the IP traffic flow through IR-IP will be disrupted until the other stations in the IP network learn the new address.

To change the LAN IP address of an already-configured IR-IP, use the procedure described above for a new IR-IP with the following differences:

- Configure the destination address of the ***ping*** utility to the new LAN interface IP address. It is not necessary to change the Telnet host source address.
- When ready, set section 1 of the IR-IP DIP switch to ON.

  The ERR indicator starts flashing faster (approximately four times a second).
- Perform steps 4, 5 of the procedure used for a new IR-IP.

What to Do If ...

➤ **The LINK indicator (10BaseT version) does not light immediately after ASMi-52 is turned on**

The IR-IP interface module does not receive power from the ASMi-52 power supply. Service is required.

Note *After the power-up process ends, the LINK indicator shows LAN integrity. It may stay turned off without indicating power supply failure.*

➤ **The ERR indicator does not light immediately after ASMi-52 is turned on**

IR-IP is faulty and must be replaced.

➤ **After turn-on, the ERR indicator lights for 15 seconds, and then turns off. ACT lights from time to time, but there is no response from IR-IP**

One of the following:

- No software loaded into IR-IP. Download software using the procedure described in the *Downloading New Software* section below.
- IR-IP has been configured. If you do not know the current IP address of the LAN interface, erase IR-IP router configuration using the procedure given in the *Erasing User's Configuration* section below.

➤ **No ping replies from IR-IP**

If your host does not begin to receive ***ping*** replies after three unsuccessful attempts, check the physical connection path between the Telnet host Ethernet interface and the IR-IP 10BASE-T connector.

➤ **The IP learning process is not successful**

Check that the prescribed IP address does not appear in the ARP table.

B.6 IR-IP Management Utility

General Operating Procedures

The IR-IP interface module is managed via a simple, menu-driven utility that uses a basic terminal user interface. A typical screen is shown in *Figure B-3*.

As seen in *Figure B-3*, each screen has a header that identifies the device being configured and its logical name, assigned by the user, followed by the running software revision and date. The bottom line of the screen displays prompts that guide you in the execution of the various activities.

Use the following general procedures to perform the desired activity:

- To change a parameter or to select a menu item, type the corresponding line number.
- For a parameter, which has a discrete set of values, the parameter values are enclosed in brackets [ ]. To select a new value, press the spacebar to scroll among the available values until the desired value is displayed, and then press **<Enter>** to select the displayed value.
- To enter a value which requires free text entry, type in the desired string and then press **<Enter>**. Use backspace to erase the current string.
- After all the parameters have been selected, a prompt appears, requesting that you confirm the changes.

Note *For proper display of the screens, you must:*

- *Select a fixed-pitch system font for the display. Use your operating system documentation to find how to select a proper font.*
- *Configure the Telnet utility to use VT-100 terminal emulation.*

Starting a Management Utility

The management utility is started automatically when Telnet communication is established. If password protection is enabled (see the *Defining Management Access* section below), you will be prompted to enter the Telnet password. The opening screen, which appears after the Telnet session activation, is the IR-IP Main menu (see *Figure B-3*).

```
IR_IP                        <IR-IP>                 S/W Ver. 1.21 (date)

1. Quick Setup
2. Management Access
3. Advanced Setup
4. Device Control
5. View
6. Diagnostic Tool (PING terminal)

Press one of the numbers to select or ESC:
```

Figure B-3. IR-IP Main Menu

To end the utility, press **<Esc>** when the Main menu is displayed. This will also end the Telnet session.

Menu Structure of Management Utility

Figure B-4 shows the menu structure of the IR-IP management utility.

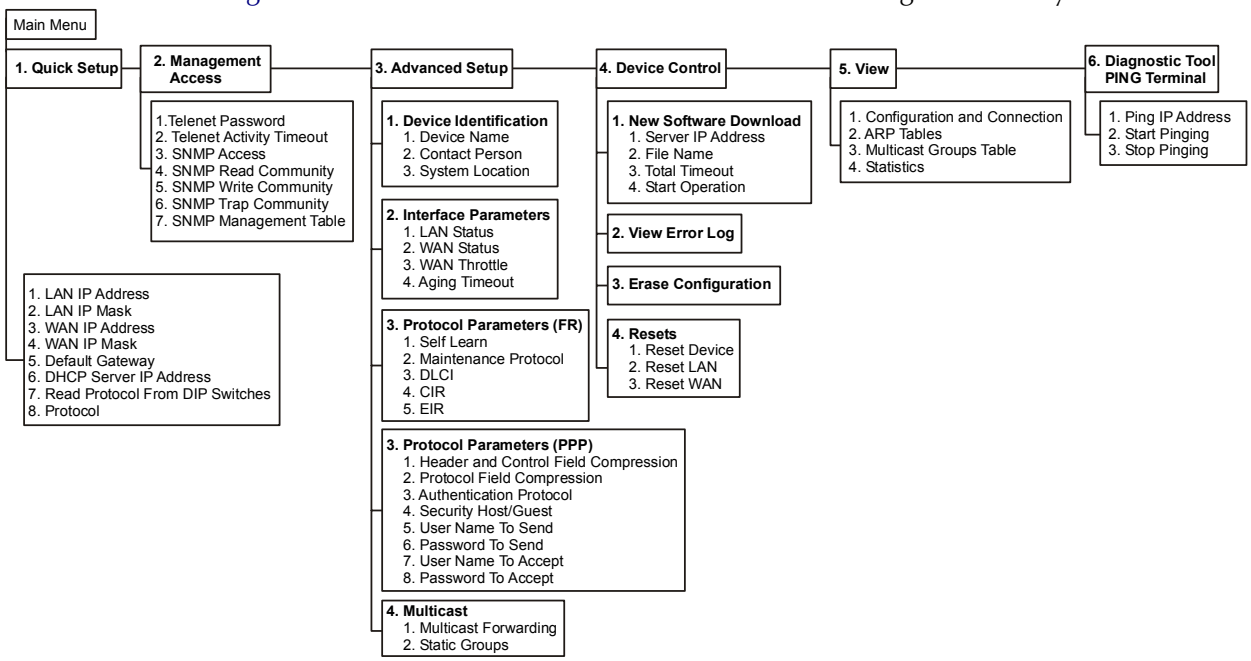

Figure B-4. Management Utility, Menu Structure

B.7 Quick Setup Guide

The Quick Setup menu is used to select the main parameters' values that must be defined before you start using IR-IP.

Use the Advanced Setup menu (see the *Advanced Setup* section below) to specify values for other IR-IP configuration parameters not included in this menu.

➤ **To perform quick setup:**

1. From the Main menu, type **1**.

   The Quick Setup menu appears (*Figure B-5*).

```
IR_IP                          <IR-IP>              S/W Ver. 1.21 (date)
Quick Setup
=========================================================================
1. LAN IP Address                                        :192.168.100.001
2. LAN IP Mask                                           :255.255.255.000
3. WAN IP Address (empty for unnumbered)                 :................
4. WAN IP Mask (empty for unnumbered)                    :................
5. Default Gateway (empty - WAN interface)               :................
6. DHCP Server IP address (empty for relay disabled)     :................
7. Read Protocol From DIP Switches                       :[ Yes ]
8. Protocol                                              :[ Frame Relay ]

Press one of the numbers to select or ESC:
```

Figure B-5. Quick Setup Menu

2. Enter addresses for LAN IP, LAN IP Mask, WAN IP, WAN IP mask, default gateway and DHCP server.

LAN IP Address – The LAN IP address for the IP router LAN interface, is the address to which nodes connected to the local LAN send packets that are addressed to the WAN.

LAN IP Mask – Used to enter the IP subnet mask. The IP router supports a maximum of 254 hosts on the LAN, therefore you must use Class C subnet masks. The basic subnet IP mask for Class C addresses, which supports the maximum possible number of hosts, 254, is 255.255.255.0. To help you understand the selection of IP subnet masks, *Figure B-6* provides a configuration example for a LAN with 6 nodes: the IP subnet mask for a 6-node IP network is 255.255.255.248.

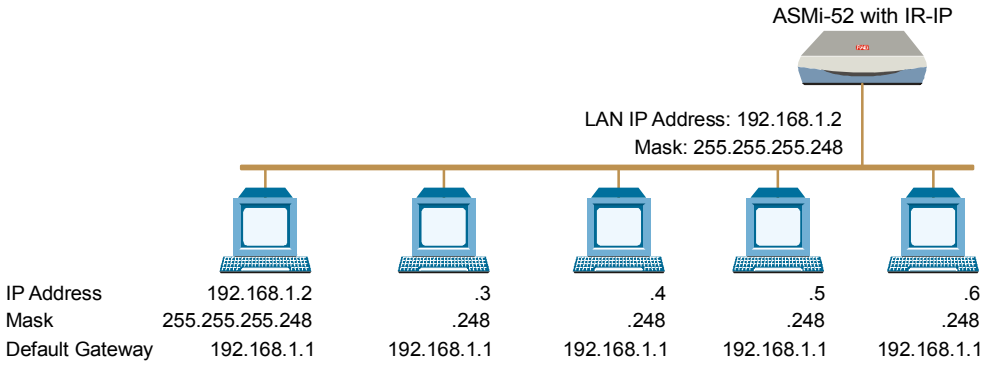

Figure B-6. Selecting the IP Subnet Mask

WAN IP Address – Used to enter the IP address for the IR-IP WAN interface, i.e., the IP address to be used by IP hosts on the WAN to reach this IR-IP interface module.

If the WAN IP Address field remains blank, IR-IP operates in the Unnumbered Router Mode.

WAN IP Mask – Used to enter the IP subnet mask for the WAN interface.

Default Gateway:

Operation without Default Gateway

The IP interface module is intended to enable the extension of LANs through the
ASMi-52 link. Therefore, its default routing operation is different from the default routing operation of standard IP routers:

- IR-IP forwards packets with destinations not located on the local LAN through the WAN interface
- Packets received from the WAN interface and destined to hosts located on the local LAN are forwarded to the LAN; other packets are discarded.

The default operation is used when the Default Gateway field is blank.

Operation with Default Gateway

You can instruct IR-IP to send packets with destinations not located on the local LAN to a specific router, which is called the ***default gateway***. The default gateway must be connected to the local LAN.

To use this option, enter the IP address of another router attached to the local LAN in the Default Gateway field.

Note *It is very important to obtain the correct parameters from the system administrator or ISP. The most common problem when establishing an IP connection is incorrect configuration of IP parameters and default gateway. Do not try to guess these parameters.*

DHCP Relay – IR-IP can operate as a DHCP relay for computers on its LAN. In this mode, the user does not need to configure the IP addresses and other related parameters for the PCs on the LAN: they receive the configuration from the DHCP server via the IR-IP module.

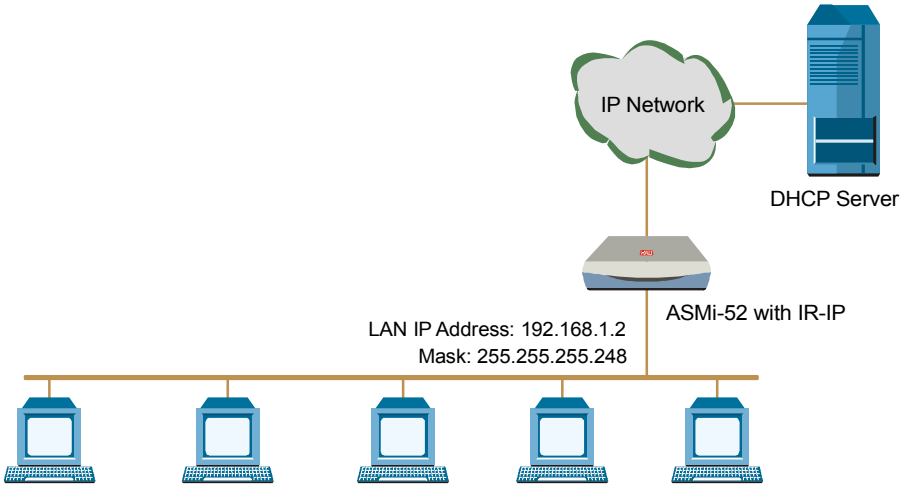

Figure B-7. Selecting the IP Subnet Mask

Note *Leaving the DHCP Server IP Address field blank disables the DHCP relay.*

3. Set the protocol requirements.

Reading Protocol from DIP Switches –

Selecting YES for this parameter (Quick Start Menu) forces IR-IP router card to use the WAN protocol selected by section 2 of its DIP switch: PPP or Frame Relay.

If you want to be able to select the WAN protocol by means of the Protocol field (parameter 7) of the Quick Setup menu, select NO.

Protocol – Used to select the WAN protocol to be used by the IP router card: PPP, HDLC or Frame Relay.

This parameter is available only if the Read Protocol from DIP Switches parameter is set to NO.

B.8 Defining Management Access

The Management Access menu is used to enable the use of passwords to protect the access to IR-IP management utility, and control the inactivity time-out interval.

When password protection is enabled, a Telnet management session can start only after the correct password is entered.

➤ **To access the Management Access menu:**

- From the Main menu, type **2**.

The Management Access menu appears (*Figure B-8*).

```
IR_IP                        <IR-IP>              S/W Ver. 1.21 (date)

Quick Setup
Management Access
=================================================================
      1. Telnet Password                                :.........
      2. Telnet Inactivity Timeout (min)                :300..
      3. SNMP Access                                    :Disabled
      4. SNMP Read Community                            :public....
      5. SNMP Write Community                           :public....
      6. SNMP Trap Community                            :public....
      7. SNMP Management Table                          :>>>

Press one of the numbers to select or ESC:
```

Figure B-8. Management Access Menu

Note *Since the IP router card does not support SNMP management, the SNMP Read Community, SNMP Write Community, SNMP Trap Community, and SNMP Management Table parameters are not used.*

Defining a Telnet Password

By default, management access to IR-IP via Telnet is unrestricted. To restrict access, enter a Telnet password by selecting **1** in the Management Access menu. The password can include up to 10 characters, and is case-sensitive. The next time a Telnet session is opened, a password must be entered to enable you to access the IR-IP menus.

At any time, only one Telnet connection to IR-IP is permitted. Any attempt to open an additional connection while the current session is open is rejected.

Setting Telnet Inactivity Timeout

This parameter specifies the time a Telnet session is kept open when there is no keyboard activity. When the specified time-out expires, the Telnet session is closed and another user can access IR-IP.

B.9 Advanced Setup

The Advanced Setup menu is used to select the desired group of IR-IP configuration parameters.

The parameters accessed through Advanced Setup menu supplement the parameters available on the Quick Setup screen, by providing control over all the other IR-IP parameters.

➤ **To perform advanced setup:**

- From the Main menu, press **3**.

  The Advanced Setup menu appears (*Figure B-9*).

```
IR_IP                        <IR-IP>              S/W Ver. 1.21 (date)

Quick Setup
Management Access
Advanced Setup
=============================================================================
     1. Device identification
     2. Interface Parameters
     3. Protocol Parameters
     4. Multicast IP

Press one of the numbers to select or ESC:
```

Figure B-9. Advanced Setup Menu

Defining the Device Identification

The Device Identification menu is used to define and store in the IR-IP logistic information: the logical name of IR-IP, information on the contact person and device location.

➤ **To define the device identification:**

1. From the Advanced Setup menu, type **1**.

   The Device Identification menu appears.

2. Assign a device name for identification by the system manager (up to eight characters). The assigned name is displayed in the screen header.
3. Enter the name of the person to be contacted with matters pertaining to this equipment unit.
4. Enter the physical location of the device.

Defining the Interface Parameters

The Interface Parameters menu is used to control the operation of IR-IP interfaces.

➤ **To define the Interface Parameters:**

1. From the Advanced Setup menu, type **2**.

   The Interface Parameters menu appears (*Figure B-10*).

```
IR_IP                      <IR-IP>              S/W Ver. 1.21 (date)
Quick Setup
Management Access
Advanced Setup
.............................................................
     Device identification
     Interface Parameters
=============================================================
     1. LAN Status                                    :[ Open  ]
     2. WAN Status                                    :[ Open  ]
     3. WAN Throttle                                  :[ Full  ]
     4. Aging Timeout (min)                           :5.

Press one of the numbers to select or ESC:
```

Figure B-10. Interface Parameters Menu

2. Set the LAN status to enable/disable the flow of packets through LAN interface:
   - **Open** – the flow of packets is enabled.
   - **Closed** – the flow of packets is disabled. As a result, IR-IP does not accept, nor sends packets to the LAN, but its WAN interface may still be active, and can interact with other IP hosts on the WAN.
3. Set the WAN status to enable/disable the flow of packets through the WAN interface:
   - **Open** – the flow of packets is enabled.
   - **Closed** – the flow of packets through the WAN interface is disabled. As a result, IR-IP does not accept from, nor sends packets to the WAN. However, the LAN interface of the IP router is still active.
4. Select the WAN Throttle. This is the maximum data rate at which frames are sent to the WAN (i.e., to the SHDSL link).

   The available selections are:
   - 64 kbps
   - 128 kbps
   - 256 kbps
   - 512 kbps
   - 1024 kbps
   - Full (no restriction on the rate).

   Since the IP router buffers have a limited capacity (256 frames), it is recommended to select the WAN Throttle parameter in accordance with the line rate.
5. Specify the Aging Timout. This is the time after which inactive LAN stations are removed from the IR-IP ARP table.

   A station is defined as inactive when no IP traffic is received from it by the IR-IP LAN interface.

Defining the WAN Protocol Parameters

Frame Relay Protocol

The Frame Relay Protocol Parameters menu is used to configure the parameters Frame Relay WAN for protocol (the WAN protocol is selected by means of the *Quick Setup*) in *Figure B-5*.

➤ **To define the Frame Relay protocol parameters:**

1. From the Advanced Setup menu, type **3**. (A typical Frame Relay Protocol Parameters menu is shown in *Figure B-11*.)
2. Specify the Self Learn for the Frame Relay DLCI and maintenance protocol
   - ENABLED = learned automatically
   - DISABLED = manually entered
3. If the Self Learn parameter is DISABLED, specify the **Maintenance Protocol**
4. If the Self Learn parameter is DISABLED, specify the **DLCI** used for exchanging maintenance protocol messages.
5. Specify the **CIR.** This is the maximum amount of data, in bits, which the Frame Relay network guarantees to transfer during the measurement interval (the measurement interval is usually one second).

   The value of this parameter is obtained from your Frame Relay service provider.
6. Specify the **EIR**. This is the maximum amount of data, in bits, that the Frame Relay network will attempt to deliver during the measurement interval. The value of this parameter is obtained from the Frame Relay service provider.

```
IR_IP                      <IR-IP>             S/W Ver. 1.21 (date)

Quick Setup
Management Access
Advanced Setup
.....................................................................
     Device identification
     Interface Parameters
     Protocol Parameters
=====================================================================
     1. Self Learn                                 :[ Enabled  ]
     2. Maintenance Protocol                       :[ ANSI T1.617 ANNEX D ]
     3. DLCI (0-None)                              :0..
     4. CIR                                        :0.......
     5. EIR                                        :64000...

Press one of the numbers to select or ESC:
```

Figure B-11. Frame Relay Protocol Parameters Menu

PPP Protocol Menu

The PPP Protocol Parameters menu is used to configure the parameters PPP WAN for protocol (the WAN protocol is selected by means of the (the WAN protocol is selected by means of the *Quick Setup*) in *Figure B-5*.

➤ **To define the PPP Protocol Parameters:**

1. From the Advanced Setup menu, type **3**. A typical PPP Protocol Parameters menu is shown in *Figure B-12*.
2. Define the use of **Header and Control Field Compression** type according to RFC 1661. It is strongly recommended that this compression be used for troubleshooting only.
3. Define the use of **Protocol Field Compression** type according to RFC 1661. It is recommended that this compression be used for troubleshooting only.
4. Select the **Authentication Protocol** used by an IP router configured as host to validate incoming connections.
5. Configure the IP router **Security Host/Guest** parameter.
   - Guest unit, to be authenticated by another router
   - Host unit, that authenticates other routers.
6. Define the **User Name To Send**. An IP router card configured as guest identifies itself by this name.
7. Define the **Password To Send.** The password by which an IP router card configured as guest identifies itself.
8. Specify the **User Name to Accept,** by an IP router configured as host, when an incoming connection request is received.
9. Specify the user **password** to be accepted by an IP router configured as host, when an incoming connection request is received.

```
IR_IP                      <IR-IP>              S/W Ver. 1.21 (date)
Quick Setup
Management Access
Advanced Setup
.....................................................................
     Device identification
     Interface Parameters
     Protocol Parameters
=====================================================================
     1. Header and Control Field Compression          :[ No  ]
     2. Protocol Field Compression:                   :[ No  ]
     3. Authentication Protocol                       :[ NONE/NONE  ]
     4. Security Host / Guest                         :[ Guest  ]
     5. User Name To Send                             :.................
     6. Password To Send                              :.................
     7. User Name To Accept                           :.................
     8. Password To Accept                            :.................

Press one of the numbers to select or ESC:
```

Figure B-12. PPP Protocol Parameters Menu

Defining the Multicast Parameters

The Multicast IP menu is used to specify the IP multicast frame forwarding parameters, and to access the static multicast groups' table.

➤ **To define the Multicast Parameters:**

1. From the Advanced Setup menu, press **4**.

   The Multicast IP menu appears (*Figure B-13*).

```
IR_IP                        <IR-IP>              S/W Ver. 1.21 (date)
Quick Setup
Management Access
Advanced Setup
.....................................................................
     Device identification
     Interface Parameters
     Protocol Parameters
     Multicast IP
=====================================================================
     1. Multicast forwarding                          :[ Disable ]
     2. Static groups                                 :>>>

Press one of the numbers to select or ESC:
```

Figure B-13. Multicast IP Menu

2. Specify the **Multicast Forwarding.** Used to control the forwarding of IP multicast frames. The following selections are available:
   - **DISABLED** – Disables multicast forwarding in both directions.
   - **LAN to WAN** – Enables forwarding of IP multicast frames addressed to groups appearing in the Static Multicast Groups table, from the LAN to the WAN.
   - **WAN to LAN** – Enables forwarding of IP multicast frames addressed to groups appearing in the Static Multicast Groups table, from the WAN to the LAN.
   - **BIDIRECTIONAL** – Enables forwarding of IP multicast frames addressed to groups appearing in the Static Multicast Groups table, in both directions.
   - **WAN to LAN + IGMP** – Enables forwarding of IP multicast frames addressed to groups appearing in the Static Multicast Groups table, from the WAN to the LAN. In addition, more groups can be added dynamically (the additional can be viewed using the View menu – *Figure B-18*).
   - **TRANSPARENT** – All the IP multicast frames are forwarded, irrespective of the Static Multicast Groups table.
3. Select **Static Groups** to access the static multicast groups table. The table is used to specify the IP addresses for up to 10 IP multicast groups.

➤ **To access the Static Groups menu:**

1. From the Multicast IP menu, type **2**.

   The following screen appears:

```
IR_IP                        <IR-IP>              S/W Ver. 1.21 (date)

                         Static Multicast Groups Table
                         -----------------------------
   Group IP Address
1.  ................
2.  ................
3.  ................
4.  ................
5.  ................
6.  ................
7.  ................
8.  ................
9.  ................
10. ................

Press 'A'-add, 'E'-edit, 'D'-delete, 'C'-clear all, 'ESC'-exit:
```

Figure B-14. Static Multicast Groups Table

2. Add, change, or delete IP addresses in the table (see the prompt line).

B.10 Using the Device Control Menu

The Device Control menu is used to download software from TFTP servers and perform interface and device resets.

➤ **To access the Device Control menu:**

- From the Main menu, type **4**.

  The Device Control menu appears (*Figure B-15*).

```
IR_IP                        <IR-IP>              S/W Ver. 1.21 (date)
Quick Setup
Management Access
Advanced Setup
Device Control
------------------------------------------------------------
     1. New Software Download
     2. View error LOG
     3. Erase configuration
     4. Resets
Press one of the numbers to select or ESC:
```

Figure B-15. Device Control Menu

Downloading New Software

IR-IP operates as a TFTP client, and therefore it is possible to update its software by downloading new software from another computer that operates as a TFTP server.

The New Software Download menu is used to specify the software downloading parameters.

➤ **To download new software:**

1. From the Device Control submenu, type **1**.

   New Software Download menu appears (*Figure B-16*).

```
IR_IP                      <IR-IP>              S/W Ver. 1.21 (date)

Quick Setup
Management Access
Advanced Setup
Device Control
.....................................................................
     New Software Download
=====================================================================
     1. Server IP Address                              :..............
     2. File Name                                      :................
     3. Total Timeout (sec)                            :..
     4. Start operation                                :>>>
Press one of the numbers to select or ESC:
```

Figure B-16. New Software Download Menu

2. Define the **Server IP Address** of the TFTP server.
3. Enter the **File Name** and path of the file to be transferred from the TFTP server.
4. Enter the **Total Timeout** time the IP router should wait for an acknowledgment from the TFTP server, for example 60 seconds.
5. After defining all the necessary parameters, select **Start Operation** on the New Software Download screen and then press **<Enter>** to start the downloading.

You can follow the progress of the downloading process (indicated by arrows).

Upon completion of the download process, the unit performs a reset. The Telnet connection is lost and must be restarted if required.

Viewing the Error Log

This item of the Device Control submenu is used to view the error log file. This file logs errors detected in IR-IP for debug and technical support purposes.

Erasing Configuration

Selecting **Erase Configuration** allows you to reset *all* the configuration parameters to their default values.

Note

- *Do this only if you need to reconfigure the module anew (all the parameters).*
- *After erase confirmation all connections with the IR-IP module will be lost. For instructions on further configuration, refer to Performing Preliminary Configuration on page B-7.*

Resetting IR-IP

The Reset menu allows you to perform reset of IR-IP, or its interfaces.
This operation can be used to restore normal operation after service is disrupted by an abnormal condition. Any data stored in the IR-IP buffers is discarded, and the flow of traffic is temporarily interrupted.

```
IR_IP                      <IR-IP>              S/W Ver. 1.21 (date)

Quick Setup
Management Access
Advanced Setup
Device Control
.................................................................
     New Software Download
     View error LOG
     Resets
=================================================================
     1. Reset Device
     2. Reset LAN
     3. Reset WAN
Press one of the numbers to select or ESC:
```

Figure B-17. Resets Menu

➤ **To restart IR-IP:**

- From the Device Control menu, select Resets. From the Resets menu, type **1**.

  You will be prompted to confirm the reset operation.

Note *Resetting the device will restart the IR-IP interface module, and therefore traffic flow is temporarily interrupted, and the Telnet connection is lost.*

Reset LAN

➤ **To reset the LAN interface:**

- From the Resets menu, select **Reset LAN**.

  You will be prompted to confirm the reset operation.

Note *This operation restarts the IR-IP LAN controller.*
To continue your Telnet session, press any key within 15 seconds following the confirmation of the reset operation.

Reset WAN

➤ **To reset the WAN interface:**

- From the Resets menu, select **Reset WAN**.

  You will be prompted to confirm the reset operation.

Note *Resetting the WAN interface causes the WAN controller to be restarted. This results in renegotiation of the WAN protocol parameters.*
To continue your Telnet session, press any key within 15 seconds following the confirmation of the reset operation.

B.11 Viewing IR-IP configuration Data

The View menu is used to view the IR-IP configuration data, and display information on its ARP tables, multicast Groups tables and statistics.

➤ **To view the IR-IP configuration data:**

- From the Main menu, select V**iew**.

  The View menu appears (*Figure B-18*).

```
IR_IP                        <IR-IP>              S/W Ver. 1.21 (date)

Quick Setup
Management Access
Advanced Setup
Device Control
View

------------------------------------------------------------
     1. Configuration and Connection
     2. ARP Tables
     3. Multicast Groups Table
     4. Statistics

Press one of the numbers to select or ESC:
```

Figure B-18. View Menu

Viewing Configuration and Connection

This screen is used to view the configuration parameters of IR-IP. In addition, you can also view the current status of the LAN and WAN interface.

➤ **To access the Configuration and Connection screen:**

- From the View menu, select **Configuration and Connection**.

  The View Configuration screen appears (*Figure B-19*).

```
IR_IP                        <IR-IP>              S/W Ver. 1.21 (date)
                               VIEW CONFIGURATION
                               ------------------
BOOT Version       :1.06  18.03.1999
Device Name        :IP router card
System Location    :The location of this device
Contact Person     :Name of contact Person
MAC Address        : 00-20-D2-16-3F-9B
Default Gateway    : WAN
Intrf Type   Baud(Kbps)  Prot   IP Address        IP Mask           Status
.....................................................................
LAN   UTP    -------     Ethr   192.168.205.005   255.255.255.000   Connected
WAN   V.110              FR                                        Not Conn.
Press any key to continue:
```

Figure B-19. View Configuration Screen

Viewing the ARP Tables

This screen is used to display the IR-IP ARP table. This table shows the IP address assigned to each station on the LAN (the stations are identified by their MAC addresses).

➤ **To access the ARP Tables screen:**

- From the View menu, select **ARP Tables**.

  The ARP Tables screen appears (*Figure B-20*).

```
IR_IP                        <IR-IP>              S/W Ver. 1.21 (date)


                                 ARP Table
                                 ---------

    IP Address          MAC Address          IP Address    MAC Address
    192.168.205.003     00-40-33-20-C8-3C

Press any key for exit
```

Figure B-20. ARP Tables Screen

Viewing the Multicast Groups Table

This screen is used to display information about the multicast group IP addresses and their status.

➤ **To access the multicast groups table screen:**

- In the View menu, select **Multicast Groups Table**.

  The Multicast Groups Table screen appears (*Figure B-21*).

```
IR_IP                      <IR-IP>              S/W Ver. 1.21 (date)


Multicast Groups Table
----------------------

     Group IP Address Status           Group IP Address Status

Press any key for exit
```

Figure B-21. Multicast Groups Table Screen

Viewing the Statistics Screen

The Statistics screen is used to display statistical information on the traffic between the networks connected by IR-IP. The data displayed on this screen enables you to evaluate the IR-IP performance. Two different Statistics screens are used, one for the LAN side and the other for the WAN side.

➤ **To access the Statistics menu:**

- In the View menu, select **Statistics**.

The LAN and WAN Statistics screens appear (*Figure B-22* and *Figure B-23*).

```
IR_IP                      <IR-IP>              S/W Ver. 1.21 (date)

                           SYSTEM STATISTICS
                           -----------------
     Counter Name              Val     Counter Name                 Val
LAN in Octets                83504    LAN IP Header Errors         0
LAN Unicast Frames In            1    LAN IP Address Errors        0
LAN Non-Unicast Frames In        9    LAN Alignment Errors         0
LAN Out Octets               83504    LAN CRC Errors               0
LAN Unicast Frames Out        3560    LAN Single Collisions        0
LAN Non-Unicast Frames Out       0    LAN Multiple Collisions      0
LAN to WAN Frames Passed      1698    LAN Late Collisions          0
LAN IP Datagram Received      2638    LAN Excessive Collisions     0
LAN to CPU Frames Discarded      0    LAN Frames Too Long Errors   0
LAN to WAN Frames Discarded      0    LAN RX FIFO Overrun Error    0
LAN Out Errors                   0    LAN SQE Transmitted          0
LAN RX Frames Errors             0    LAN Deferred Frames          1
LAN MAC Receive Errors           0    LAN Carrier Sense Lost       0
LAN MAC TX Errors                0    LAN FIFO Underrun            0

     N - Next Screen. ESC - Back To Previous Menu.
     R - Refresh Page. C - Clear The Counters Of This Page.
```

Figure B-22. LAN Statistics Screen

```
IR_IP                       <IR-IP>              S/W Ver. 1.21 (date)

                              SYSTEM STATISTICS
                              -----------------
     Counter Name                Val     Counter Name                Val
WAN in Octets                   83504    WAN Alignment Errors        0
WAN Out Octets                   1950    WAN Aborted Frames          0
WAN Out Frames                   1723    WAN Short Frames            0
WAN to LAN Frames Transfer       1698    WAN RX FIFO Overrun Error   0
WAN IP Datagram Received         1723    WAN to CPU Frames Errors    0
WAN to CPU Discarded                0    WAN Frame Too Long Errors   0
WAN to LAN Discarded                0    WAN IP Header Errors        0
WAN Out Errors                      0    WAN IP Addres Errors        0
WAN CRC Errors                      0

PPP Address Error                   0
PPP Control Error                   0
DLCI Unrecognized Error             0
Frame Relay Forward Conge           0
Frame Relay Backward Conge          0

     P - Previous Screen. ESC - Back To Previous Menu.
     R - Refresh Page. C - Clear The Counters Of This Page.
```

Figure B-23. WAN Statistics Screen

B.12 Using Diagnostic Tools (Ping Terminal)

This section provides information on the diagnostic tool provided with IR-IP (the ***ping*** utility).

➤ **To access the Diagnostic Tools menu:**

- In the Main menu, select **Diagnostic Tool**.

  The Diagnostic Tools menu appears (*Figure B-24*).

```
IR_IP                       <IR-IP>              S/W Ver. 1.21 (date)

Quick Setup
Management Access
Advanced Setup
Device Control
View
Diagnostic Tools (PING terminal)
=================================================================
     1. Ping IP Address                          :192.168.100.011
     2. Start Pinging                            :>>>
     3. Stop Pinging                             :>>>

Press one of the numbers to select or ESC:
```

Figure B-24. Diagnostic Tools Menu

Using the Ping Function

The Ping option is used to confirm IP connectivity by pinging other IP hosts. Connectivity is confirmed by receiving a reply from the remote (pinged) IP host.

➤ **To ping a host:**

1. From the Diagnostic Tools menu, type **1** and enter the desired host IP address.
2. Press **<Enter>** to confirm the destination IP address.
3. To start pinging, type **2** on the Diagnostic Tools screen.

   After pinging starts, you can monitor the ***ping*** status. A typical screen is shown in *Figure B-25*.

Note *After pinging is started, it continues in the background even if you exit the Diagnostics Tools screen. In this case, a Ping Running message appears in the top upper left-hand corner of the screen.*

4. To stop pinging, type **3** from the Diagnostic Tools menu.

   A **Ping Stopped** message is displayed.
   To clear the message and return to the Diagnostic Tools screen, press any key.

```
IR_IP                        <IR-IP>              S/W Ver. 1.21 (date)

Quick Setup
Management Access
Advanced Setup
Device Control
View
Diagnostic Tools (PING terminal)
=====================================================================
     1. Ping IP Address                                  :192.168.100.011
     2. Start Pinging                                    :>>>
     3. Stop Pinging                                     :>>>

Pinging 192.168.212.001 Sent 27 Recvd 25  Lost 2  Resp.Time 60 ms

Press one of the numbers to select or ESC:
```

Figure B-25. Diagnostic Tools Menu after Receiving Pinging Response

B.13 Erasing User's Configuration

The user-defined configuration parameters are stored in the IP router card flash memory. After the user-defined configuration parameters are erased, the IP router card automatically loads the default parameters.

You may want to erase the current configuration parameters:

- Before IR-IP is prepared for operation in a new application.

- When you cannot configure IR-IP because its current LAN-interface IP address and/or the Telnet password, are not known.

➤ **To erase the user's configuration:**

1. Turn ASMi-52 off.
2. Set all the four sections of the IR-IP DIP switch (see *Table B-2*) to ON.
3. Turn ASMi-52 on and monitor the ERR and LINK indicators: they must blink alternately.
4. While ERR and LINK are blinking (within 15 seconds), set sections 1 and 2 of the DIP switch to OFF.

   The IP router configuration is erased. During the process of erasing, the ERR indicator turns on and lights steadily.

Note

If you do not set sections 1 and 2 to OFF within 15 seconds of power-up, the IP router card ignores the setting of all the four sections to ON and starts normal operation. In this case, it is recommended to turn ASMi-52 off and then back on. To abort the whole operation, turn ASMi-52 off, return all the four-switch section to the desired positions, and then turn ASMi-52 on again.

5. Turn ASMi-52 off, and then return all the four sections of the DIP switch to the desired positions.

B.14 Erasing IR-IP Software

You may erase the IR-IP application software, without erasing the user-defined parameters.

After the application software is erased, IR-IP starts its TFTP server application, and waits for the downloading of software by a TFTP client connected to its LAN interface. The procedure to be used to download the application software in this case is also described below.

You may want to erase the application software if the downloading of new software using the Device Control menu (see *Figure B-15*) fails, and the IP router card does not function properly.

Erasing Application Software

➤ **To erase the application software:**

1. Turn ASMi-52 off.
2. Set all the four sections of IR-IP DIP switch to ON.
3. Turn ASMi-52 on and monitor the ERR and LINK indicators: they must blink alternately.
4. While ERR and LINK are blinking (within 15 seconds), set sections 3 and 4 of the DIP switch to OFF.

   The IP router application software is erased. During the process of erasing, the ERR indicator turns on and lights steadily.

Note *If you do not set sections 3 and 4 to OFF within 15 seconds of power-up, IR-IP ignores the setting of all the four sections to ON and starts normal operation. In this case, it is recommended to turn ASMi-52 off and then back on.*
Alternately, to abort the whole operation, turn ASMi-52 off, return all the four switches to the desired positions, and then turn ASMi-52 on again.

5. Turn ASMi-52 off, and then return all the four sections of the DIP switch to the desired positions.

Downloading New Software

After erasing the application software, you can download new software from any computer that can serve as a TFTP client.

To enable the downloading, IR-IP automatically activates its TFTP server application with the following factory-default IP parameters:

- IP address: 192.168.205.1
- Subnet mask: 255.255.255.252.

Connect the computer serving as a TFTP client to the IR-IP 10BASE-T connector in the way as a Telnet host used for preliminary configuration (see the *Performing Preliminary Configuration* section). The computer IP parameters must be configured as follows:

- IP address 192.168.205.2
- Subnet mask 255.255.255.252
- Default gateway 192.168.205.1

➤ **To download new software:**

1. If necessary, turn ASMi-52 off.
2. Set all the four sections of the IR-IP DIP switch to OFF.
3. Turn ASMi-52 on.
4. Connect the computer to the IP router LAN interface (for the 10BaseT version, verify that the LINK indicator lights steadily) and configure its IP parameters as explained above.
5. Run a standard TFTP client application on the Telnet host, and download the appropriate software file.
   - If the download is successful, IR-IP starts using the new software.
   - If the downloading fails, repeat the download process.

Appendix C
Configuration Menus

This appendix lists all menus of the ASMi-52 management software.

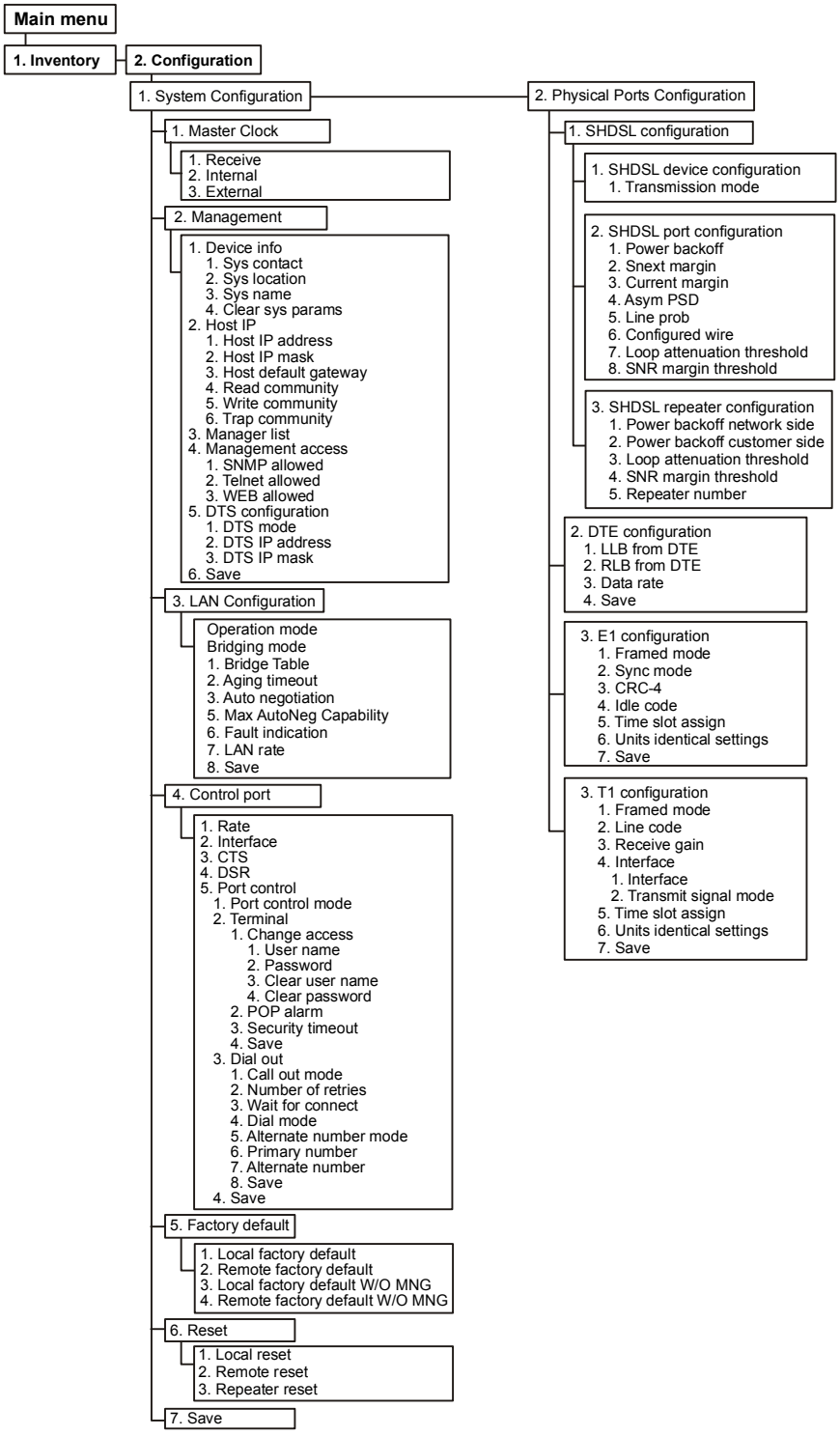

Figure C-1. Inventory and Configuration Menus

Notes

Some of the management menu options depend on the type of the DTE interface installed in ASMi-52:

- *DTS Configuration (**Main menu > Configuration > Management**) is available only for the units with E1 or T1 interface.*
- *LAN Rate (**Main menu > Configuration > LAN Configuration**) is available for the units with the user 10/100BaseT port.*
- *Data Rate (**Main menu > Configuration > Physical Port Configuration > DTE Configuration**) is available for the units with a serial DTE interface.*
- *E1/T1 Configuration (**Main menu > Configuration > Physical Port Configuration > E1/T1 Configuration**) is available for the units with an E1/T1 DTE interface.*
- *Figure C-1 illustrates software menus of the unit that operates with SHDSL repeater in line.*

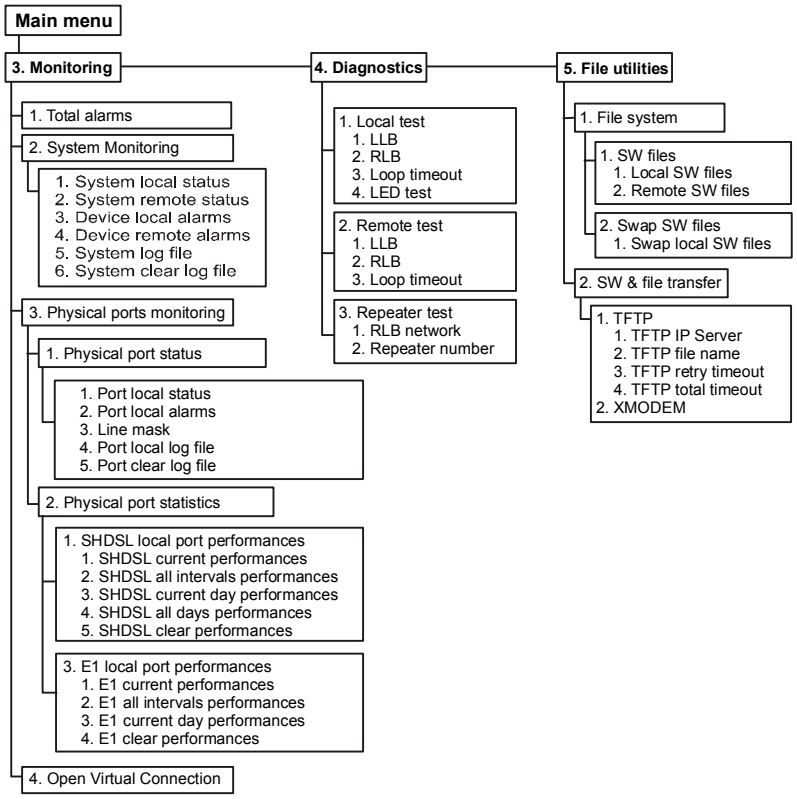

Figure C-2. Monitoring, Diagnostics and File Utilities Menus

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